KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

MUNICIPAL, COMMERCIAL, AND INDUSTRIAL LAGOON REGULATIONS

RESPONSIVENESS SUMMARY

April 12, 2005

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

MUNICIPAL, COMMERCIAL, AND INDUSTRIAL
LAGOON REGULATIONS

RESPONSIVENESS SUMMARY

TABLE OF CONTENTS

PAGE

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

MUNICIPAL, COMMERCIAL, AND INDUSTRIAL
LAGOON REGULATIONS

RESPONSIVENESS SUMMARY

ATTACHMENTS

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
Municipal, Commercial, and Industrial Lagoon Regulations
Responsiveness Summary

This Responsiveness Summary provides staff's summary, analysis, response, and recommendations to Secretary Roderick L. Bremby (Secretary) regarding comments and recommendations provided to the Kansas Department Health and Environment (KDHE) during regulation development, public outreach meetings, the public notice period and at public hearings on the proposed regulations. Staff's recommendations have been summarized and the proposed regulations modified, incorporating these recommendations, and are submitted to the Secretary for consideration.

EXECUTIVE SUMMARY

Significant changes, proposed by staff, to the proposed regulations public noticed on June 3, 2004, and for which public hearings were conducted on August 19, 2004 in Topeka, August 25, 2004 in Dodge City, and August 26, 2004 in Wichita include:

- In 28-16-160, the definition of "Groundwater" was modified to standardize, for purposes of calculating a yield rate, the size of the hole that is drilled, bored, or excavated to determine the rate of groundwater production.

- In 28-16-160, the definition of "Groundwater separation distance" was modified to establish the time period over which the maximum annual surface elevation of the groundwater is to be determined.

- In 28-160-160, the definition of "Monitoring well" was modified to clarify that groundwater flow included both direction and velocity.

- In 28-16-160, the definition of "Municipal wastewater treatment system" was modified to address when there are significant industrial wastewater contributions.

- In 28-16-160, the definition of "Permittee" was modified to clarify the permittee does not have to be the certified wastewater treatment system operator for the facility.

- In 28-16-160, the definition of "Sensitive groundwater areas" was modified to address minor text corrections and to reflect an updated publication date.

- In 28-16-160 the definition of "Wastewater treatment system" was modified to exclude lagoons or earthen basins regulated and permitted as a solid waste processing facility or solid waste landfill regulated by KDHE's Bureau of Waste Management.

- 28-16-161(d) was modified to require that when a single impermeable membrane liner was employed, within the Equus Beds, that a groundwater monitoring well system be installed and sampled.

  The cost to install a 3-well monitoring system is estimated at $4,597.60 for shallow wells and $10,132.50 for deep wells. Annual sampling and analysis of the 3-well monitoring system is estimated at $205.75. Annual reporting to KDHE is estimated at $20.37 which involves the submission of the lab results.

- 28-16-161 was modified to add criteria KDHE may consider, when determining whether an actual or potential environmental or public health threat exists.

  The criteria used in evaluating whether groundwater quality, as determined from groundwater monitoring well data, may constitute an actual or potential environmental or public health threat is the same criteria employed as surface water quality criteria. The criteria is compiled in the "Kansas Surface Water Quality Standards: Tables of Numeric Criteria" dated December 6, 2004. This document has been adopted by reference in regulation K.A.R. 28-16-28e(d). The numeric criteria for aquatic life protection, agricultural use, and public health protection would be the same regardless of whether surface water or groundwater is involved.

- 28-16-162(d) was modified to require that when a single impermeable membrane liner was employed, within the Equus Beds, that a groundwater monitoring well system be installed and sampled.

  The cost to install a 3-well monitoring system is estimated at $4,597.60 for shallow wells and $10,132.50 for deep wells. Annual sampling and analysis of the 3-well monitoring system is estimated at $205.75. Annual reporting to KDHE is estimated at $20.37 which involves the submission of the lab results.

- 28-16-162(f) was modified to allow use of a single impermeable membrane liner for low pollution potential industrial wastewater, when an impermeable membrane liner is utilized in lieu of a constructed soil liner.

- 28-16-162(f)(4) was modified to remove the word "significantly" as "significantly" had not been defined.

- 28-16-162(f) was modified to add coal pile stormwater runoff, ash, and air pollution control scrubber ponds, where low sulfur coal from the Powder River Basin is employed, to the listing of low pollution potential industrial waste sources.

- 28-16-162 was modified to add criteria KDHE may consider, when determining whether an actual or potential environmental or public health threat exists.

  The criteria used in evaluating whether groundwater quality, as determined from groundwater monitoring well data, may constitute an actual or potential environmental or public health threat is the same criteria employed as surface water quality criteria. The

criteria is compiled in the "Kansas Surface Water Quality Standards: Tables of Numeric Criteria" dated December 6, 2004. This document has been adopted by reference in regulation K.A.R. 28-16-28e(d). The numeric criteria for aquatic life protection, agricultural use, and public health protection would be the same regardless of whether surface water or groundwater is involved.

- 28-16-162 was modified to add an exemption for land based sand and gravel pits where dredge return water, water from aggregate classification operations, and wash water from the washing of dredged aggregate originates from and is returned to the dredge pit.

- 28-16-165(b) was modified to remove the 3 day notification requirement for submitting a certification the wastewater lagoon and wastewater lagoon liner system were constructed in accordance with the plans and specifications approved by the Department. The 45 day certification requirement has been retained.

- 28-16-165 was modified to add an exemption for postconstruction testing of erosion-control ponds associated with construction activities.

- 28-16-166(f) was modified for clarification per the Legislative Joint Committee on Administrative Rules and Regulations.

- 28-16-166(i)(1) was modified to add the word "threat" per the Legislative Joint Committee on Administrative Rules and Regulations.

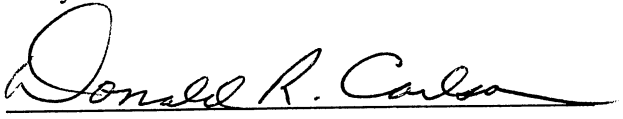
- 28-16-167(j) was modified for clarification per the Legislative Joint Committee on Administrative Rules and Regulations.

- 28-16-167(m)(1) was modified to add the word "threat" per the Legislative Joint Committee on Administrative Rules and Regulations.

- 28-16-168(b) was modified to remove the 3 day notification requirement for submitting a certification the wastewater lagoon and wastewater lagoon liner system were constructed in accordance with the plans and specifications approved by the Department. The 45 day certification requirement has been retained.

Should you have any questions regarding the Responsiveness Summary or the proposed regulations, please feel free to contact me at (785) 296-5547. We await your determination regarding the proposed regulations.

Prepared and submitted to Secretary Roderick L. Bremby on April 12, 2005.



Donald R. Carlson, P.E.
Chief, Industrial Program Section
Bureau of Water

BACKGROUND INFORMATION

In February 2003, the Secretary of the Kansas Department of Health and Environment (KDHE), Roderick L. Bremby, announced it was his goal to move forward with development of groundwater protection practices for the Equus Beds Region as well as other sensitive groundwater areas of the state. Secretary Bremby noted many valid concerns had been raised regarding the need for additional requirements to contain, treat and dispose of wastewater generated by municipal, commercial, industrial, and livestock facilities in Kansas. To address these concerns, Secretary Bremby initiated a process within KDHE to develop regulations that would establish requirements covering sources of wastewater from all of these sectors. Secretary Bremby directed the regulations be scientifically based and technically sound, utilizing information and approaches shown to be effective. Because the Equus Beds Aquifer serves as a source of water for many residences, businesses and farms, and serves a large portion of the state's population, particular emphasis was to be directed at protecting this aquifer. Secretary Bremby initiated the process by convening meetings in March 2003 with State Legislators, associations representing the agricultural industry, and with local governmental leaders and interest groups from the Equus Beds area in an effort to continue the collaborative process for soliciting ideas and to initiate this process in other areas of the state.

Information and outreach meetings were public noticed in the Kansas Register on March 27, 2003 (Attachments A and B) and were held in Topeka on April 16, 2003, Hays on April 22, 2003, and Wichita on April 23, 2003 for the purpose of soliciting ideas and recommendations regarding the development of regulations. Following the public meetings, staff reviewed and evaluated comments and recommendations received (Attachments C and D) and began drafting regulations for municipal, commercial, and industrial wastewater lagoons. A regulation package addressing livestock waste management systems and lagoons is being developed in a separate parallel process. While the regulations are being developed in separate parallel processes, every effort has been made to ensure consistency between the regulation packages, as is practical.

In implementing the Secretary's goal to move forward with the development of groundwater-protection practices for the Equus Beds Region, as well as other sensitive groundwater areas of the State, the proposed regulations attempt to:

1. Provide for enhanced groundwater protection by addressing the design, construction, and operation of wastewater lagoons which serve municipal, commercial, and industrial facilities.

2. In the case of industrial wastewater lagoon systems, the regulations convert the requirements of Policy Memorandum #90-2 (September, 1990) titled, "Industrial Wastewater Pond Liner Policy" (Attachment R) into regulation and make the requirements an enforceable part of KDHE's Minimum Standards of Design for Water Pollution Control Facilities, 1978 (Attachment Q).

3. The proposed regulations update the requirements in the Minimum Standards of Design for Water Pollution Control Facilities employed in the design of wastewater treatment systems serving municipal, commercial, and industrial facilities. Specifically, the regulatory requirements would reflect the research findings in the Kansas State University (KSU) Study regarding the effectiveness of earthen lagoons for the containment and treatment of livestock waste. While the KSU Study specifically targets livestock waste, many of the study findings are directly applicable to municipal, commercial, and industrial wastewater lagoons.

4. The regulations provide uniformity in regard to KDHE's approach in the design, construction, and operation of wastewater lagoon systems serving municipal, commercial, and industrial facilities. While there are significant differences in the wastes generated by these facilities, there are areas of common concern which KDHE desires to provide a uniform approach in addressing.

During the March and April 2003 public outreach and information meetings, KDHE presented a number of concepts and issues for consideration in an effort to generate comments and recommendations from the public (Attachment B). The concepts and issues proposed fell within the following general areas: General Provisions; Hydrogeologic Information; Soil Liner Design; Soil Liner Postconstruction Testing; Impermeable Synthetic Membrane Liner Requirements; Impermeable Synthetic Membrane Liner Postconstruction Testing; Minimum Standards of Design, Construction, and Maintenance; Water, Oil, or Gas Wells; Monitoring Wells; Plan and Specification Approval for Permit Issuance; Closure Requirements; and Variance Procedures.

Following the public outreach and information meetings, KDHE compiled and reviewed the information and recommendations received (Attachments C and D) regarding the proposed regulation concepts and issues. KDHE then developed proposed regulations (Attachment E), a Regulatory Impact Statement (Attachment F), and associated documents required to implement the proposed regulations. The proposed regulations were reviewed and approved in April and May 2004 by the Kansas Department of Administration and the Kansas Attorney General's Office.

The public notice and public hearing notice for the proposed regulations were published in the Kansas Register on June 3, 2004 (Attachment H). KDHE developed a web page for the proposed regulations (Attachment I). The web page contained the proposed regulations (May 5, 2004), the Regulatory Impact Statement (May 14, 2004), "Kansas Sensitive Groundwater Areas for Wastewater Lagoons" (November 1, 2003) (Attachment G), information regarding the public notice and public hearing notice, deadlines for submitting comments, mailing and email addresses for submitting comments, and contact information for inquiries. The regulation package was mailed to the Kansas Association of Counties, Kansas Association of School Boards, and the League of Kansas Municipalities May 12, 2004 (Attachment J).

On July 9, 2004, staff met with the Legislative Joint Committee on Administrative Rules and Regulations regarding the proposed Municipal, Commercial, and Industrial Wastewater

Lagoons Regulations. Following the meeting, the Joint Committee forwarded a July 13, 2004 letter to Secretary Bremby providing their comments and recommendations (Attachment K).

Public hearings on the proposed regulations were held in Topeka on August 19, 2004, Dodge City on August 25, 2004, and Wichita on August 26, 2004 (Attachment L). Materials and comments submitted by mail and email were accepted through the public comment period (Attachment M). Following the public hearings and the close of the public comment period, staff summarized, reviewed, and evaluated the comments and recommendations.

This Responsiveness Summary provides staff's summary, analysis, response, and recommendations regarding the comments received on the proposed regulations.

COMMENT AND RESPONSE / RECOMMENDATION SUMMARY

The following paragraphs summarize comments and issues raised during the public hearings, comments received during the public notice period, information from meetings during the public notice period, errors and enhancements identified by staff, and the comments and recommendations by the Legislative Joint Committee on Administrative Rules and Regulations. To assist in reviewing and analyzing the comments and recommendations, they have been compiled by regulation. Because a particular comment may involve, impact, or be pertinent to more than one regulation, the comment will appear in each affected regulation. As an aid in reviewing and evaluating the comments/issues, the party providing the comment is identified at the start of each comment which is followed by staff's response/recommendation.

28-16-160

Charles Benjamin:
The definition of a municipal wastewater treatment system would appear to allow systems run by municipalities that receive significant inputs from industry, such as the Dodge City, Kansas plant, to use a much weaker standard for lagoon construction even though the strength and toxicity of the wastewater may be much greater than that of a system treating entirely domestic sewage. This loop hole will encourage certain industries like packing and rendering plants to divert their wastewater to municipal systems even though they will have to pay a user fee.
The main problem with the rules, and it's a very big one, is that there is little justification for allowing municipal lagoons and lower risk commercial/industrial lagoons installed in areas other than the Equus Beds and over sensitive groundwater to be built to a weaker standard.
It is true that the risk associated with lagoons that treat entirely domestic sewage or low risk industrial wastewaters would be much less than that associated with livestock lagoons which are not considered in these rules. However, there is little justification for assuming this risk is insignificant, especially since the proposed rules appear to allow industrial dischargers to skirt the stricter industrial lagoon construction requirement by discharging all or part of their industrial process waste to the public sewer system. One need only look at the Dodge City plant for an example of combined systems that have polluted groundwater.

Response:
The Kansas Department of Health and Environment (KDHE), since 1978, has a policy promoting regionalization which was incorporated into the "Minimum Standards of Design for Water Pollution Control Facilities" as adopted by reference in K.A.R. 28-16-58. The section addressing regionalization states in part, "Regionalization of water pollution control systems shall be practiced when technically feasible and cost effective. New subdivisions, mobile home parks, industries, and other developments shall utilize existing water pollution control facilities wherever and whenever possible." Current Minimum Standards of Design, statutes, and regulations provide KDHE with the authority to address situations of both potential and actual threats of pollution of waters of the state. K.S.A. 65-164(a) and (d) provide that direct authority. Proposed regulations K.A.R. 28-16-161(f) and K.A.R. 28-16-172(a) would further enhance KDHE's authority. So long as the industrial wastewater is compatible with the type and level of treatment provided by the municipal wastewater treatment system, regionalization should continue to be encouraged. Regionalization can also maximize use of existing qualified wastewater treatment system operators to ensure wastewater treatment systems are operated efficiently and effectively. To address the above concern, the definition of "municipal wastewater treatment system" has be modified to address the type and amounts of wastewater industrial users can direct to the municipal wastewater treatment system. For new or modified systems, the Minimum Standards of Design as well as current statutory and regulatory authority enable KDHE to address the "compatible/significant industrial contributor" issue.

Westar Energy:
KAR 28-16-160(j): Grandfathering existing facilities (lagoons) via grandfathering the groundwater beneath the facilities appears to be limited, assuming that the term 'ground water' can be defined by a standard industry practice.
For an existing lagoon to remain exempt, the water beneath the lagoon would need to be exempt. The only provision for existing lagoons (provisions (2) and (3) are for proposed lagoons) to allow an exemption is that the groundwater can be produced at less than 10 gallons per hour. This is subject to interpretation.

(a) The rate of production is dependent on a well's diameter, borehole and screen placement. Larger wells produce more water. Typically, monitoring wells are 2 inch diameter, have 8-inch boreholes and have 5 foot of screen above and 5 foot of screen below the top of the water table. There should be a standard well configuration referenced.

(b) Sometimes multiple aquifers are present. Which ones would apply? Different aquifers have different production rates.

(c) What if existing 4-inch wells are present. Will there be a correlation to a 'standard' well?

Response:
Proposed 28-16-161(a) and 28-16-162(a) only prohibit the construction of new or the modification of an existing wastewater treatment lagoon if separation between the bottom of the lagoon and groundwater is less than 10 feet. This would not routinely impact existing wastewater lagoon systems. Proposed 28-16-161(f) and 28-16-162(h) would potentially impact the grandfathering of existing wastewater treatment lagoon systems if the lagoon presents either

a potential or actual environmental or public health threat. Additionally, an existing lagoon could be impacted if the KDHE Secretary orders specific improvements be made to address conditions resulting in non-compliance with statutory, regulatory, or permit requirements or present conditions that fail to adequately protect public health or the environment. We believe the committer's concerns will also be addressed by how we propose to regulate lagoons employed by steam electric generating plants for the treatment and/or containment of coal pile stormwater runoff, ash, and air pollution control scrubber wastes generated by use of low sulfur coal produced in the Powder River Basin (PRB) of Wyoming.

To clarify the definition of "groundwater", we are proposing to modify the definition to establish a "standard well/borehole size" for determining the volume of groundwater generated. We have assumed that for a typical domestic water supply well, that a 9-inch diameter borehole with a 5-inch diameter well casing is utilized. Since we are typically dealing with relatively shallow excavations, in comparison to normal well construction, any aquifer or combination of aquifers encountered to a depth of 10 feet below the lagoon bottom should be considered. Flows from existing water wells, monitoring wells, excavations, or boreholes with other than 9-inch diameters will have to be adjusted when calculating the yield rate for comparison with a 9-inch diameter borehole to determine if the 10 gallon per hour criteria has been met.

Electric Utilities of Kansas (Aqulia, Kansas City Board of Public Utilities, Empire District Electric Company, Kansas City Power and Light, Sunflower Electric Power Corporation, and Westar Energy):
KAR 28-16-160(ii) [Definition of "wastewater treatment system"]: It appears that this definition does not **clearly** exempt electric facilities that provide water treatment (settling) for the permanent disposal of certain coal combustion wastes such as bottom ash, fly ash and scrubber sludge. These facilities are primarily ponds and lakes, are permitted by the solid waste section of KDHE and are therefore subject to their regulations.

Suggested improvement #1 would add the following language.

> "Waste water treatment systems, both discharging and non-discharging, will have a Water Pollution control Permit."

Suggested improvement #2 would add the following language.

> "Waste water treatment systems, such as ponds used for sediment control and contained within an industrial monofill that has a valid permit for operating a processing facility or solid waste disposal landfill in accordance with the provisions of Kansas Statutes Annotated 65-347 are excluded from this regulation.
>
> Wastewater treatment systems, both discharging and non-discharging, will have a Water Pollution Control Permit."

Response:
The text was modified to exempt lagoons or earthen basins which are regulated and permitted as a solid waste processing facility or solid waste landfill pursuant to K.S.A. 65-3401 et seq. and Article 29. Additional text was added to provide clarification that while the lagoon or earthen basin would not require a Kansas Water Pollution Control Permit that any discharge from such a structure would be prohibited unless the discharge is authorized by a Kansas Water Pollution Control Permit. Solid waste statutes and/or regulations already address groundwater protection.

CETCO Lining Technologies:
Add definitions for "Impermeable membrane-backed geosynthetic clay liner" and "Maximum membrane-backed geosynthetic clay liner leakage rate" to include membrane-backed GCLs in the regulation.

> **(l) "Impermeable membrane-backed geosynthetic clay liner" means a commercially manufactured membrane liner composed of synthetic materials, commonly identified as being plastic or plastic polymer materials, bonded to a geosynthetic clay liner that, when properly installed, would provide for the more stringent of either of the following:**
>
> **(1) A maximum monitored or calculated seepage rate of 1/64th inch per day; or**
>
> **(2) the liner manufacturer's criteria for the material and installation of the impermeable membrane-backed geosynthetic clay liner expressed in units of volume per area per unit of time (gallons per acre per day).**

(l) through (r) become (m) through (s).

> **(t) "Maximum membrane-backed geosynthetic clay liner leakage rate" means a monitored or calculated leakage rate that is the more stringent of either 1/64th inch/day or the liner manufacturer's criteria for the material and installation of the membrane-backed geosynthetic clay liner expressed in units volume per area per unit of time (gallons per acre per day).**

Response:
CETCO produces a geosynthetic clay liner product which is a bentonite and geotextile engineered composite. CETCO's patented manufacturing process utilizes a needle punched technique which encapsulates sodium bentonite between two layers of geotextile, inhibiting the migration of the clay in its dry or hydrated state. The regulation definition of "liner" is very broad in it's scope. Because the product is a hybrid employing both geotextile membranes and bentonite, the product and its application should be approved on a case-by-case basis. The regulations do not prohibit the products use. The proposed application of this product should be approved through the engineering report and construction plan and specification review/approval process. If needed, the proposed regulations provide for a variance process where this product does not specifically meet the requirements of these regulations. Inclusion of the suggested regulation modification is not proposed.

28-16-161

Bob Myers:
The requirement of a minimum of a 10-foot separation between the bottom of a lagoon and the top of any underlying groundwater is not an overly stringent requirement, and any lagoon which is that close to the groundwater will present a significant risk to the groundwater.

Response:
No changes are proposed to the 10 foot separation requirement.

Bob Meyers:
The enhanced lagoon construction standards for sensitive groundwater areas, and the further enhancement of those standards for lagoon systems constructed over the Equus Beds, is abundantly justified based upon the critical importance of these groundwater resources to the future public and economic health and vitality of our State and based upon their vulnerability. However, those enhanced standards do not appear to be overly protective. They will not eliminate the threat of contamination from lagoon systems. Seepage rates can exceed their estimates. Lagoon liners can fail or have their integrity impaired through casualty or misuse. Overflow events can discharge lagoon contents onto unprotected soils and thereby circumvent protective liners. Thus, unless site-specific factors demonstrate otherwise, it will be important that lagoon systems in close proximity to groundwater areas be required to include monitoring wells so that any pollution to the groundwater which may occur can be promptly detected and so that remedial measures can be quickly implemented.

Response:
The proposed regulations already address site specific factors dealing with lagoon systems "in close proximity" to groundwater by prohibiting new construction when a minimum 10 foot separation between the lagoon bottom and groundwater can not be provided and with enhanced liner provisions requiring a maximum soil liner seepage rate of less than 1/10-inch per day. So long as a soil liner is employed, there will be some degree of seepage. Seepage rates at the time construction is completed should not exceed the estimated seepage estimates as the proposed regulations require postconstruction testing to confirm compliance with the maximum allowable seepage rate criteria. Failure of a soil liner is hard to detect without a means to accurately conduct a hydraulic water balance for the wastewater lagoon or providing the capability of monitoring for the presence of seepage i.e., groundwater monitoring. The proposed regulations address a requirement that new municipal or commercial earthen lagoons within the Equus Beds include the design, installation, and sampling of groundwater monitoring wells. KDHE retains the authority, in the proposed regulations, to require the installation and monitoring of groundwater monitoring wells whenever we believe it to be necessary. Monitoring the degree of leakage, on a routine basis, when a single impermeable synthetic membrane liner is employed is difficult unless damage to the liner can be observed visually, or the extent of water loss is significant. The Kansas State University livestock wastewater lagoon study found that a designed soil liner system with seepage less than ¼-inch per day can generally be constructed statewide. The proposed regulations allow use of a soil liner within the Equus Beds, with special conditions. If a new lagoon is constructed within the Equus Beds, and the designed soil liner

will not meet the less than 1/10-inch per day criteria because of the in situ soils and an impermeable synthetic membrane liner is required, groundwater monitoring should be required to determine when leakage occurs. The regulation has been modified to require groundwater monitoring capabilities for new lagoons employing single impermeable synthetic membrane liners within the Equus Beds. The estimated cost for constructing a 3-well monitoring system is estimated to be $4,597 for shallow wells and $10,132 for deep wells. The annual cost for sampling and analysis is estimated at $225. Overflows of wastewater from a lagoon are already addressed by current Kansas Water Pollution Control Permits which contain provisions requiring the reporting of insufficient freeboard and/or an actual discharge if one were to occur.

James Carlson:
With respect to the grandfathering of existing impoundments, under the proposed regulations, industries in Kansas will be allowed to continue operation of existing impoundments unless such facilities are drained and KDHE orders upgrades due to non-compliance with statutory, regulatory, permit or the general category of "protection of public health and the environment." Using the example of our Holcomb facility, our water pollution control permit is renewed every 5 years, and the most recent renewal contained additional operating and compliance provisions. The concern here is that additional requirements could be folded into permits during renewal that, over 1-2 permit cycles, could evolve to a non-compliance condition of an otherwise sound facility, placing the impoundment in jeopardy of mandated upgrades. Similarly, because a grandfather clause typically allows existing facilities to continue operations, these regulations, as proposed, appear retroactive in that facilities which may historically have impacted the environment but which are now being operated in a sound manner may be captured in a non-compliance scenario. We also believe that existing facilities should be allowed to continue operation under the historical permit conditions until their useful life is exhausted, and absent an application to KDHE for reconstruction, expansion or a current release to the environment, they should be allowed, by regulation, to continue to be operated.

Response:
The grandfathering provisions of the proposed regulations are intended to allow the continued operation of existing lagoons unless there is a potential or actual environmental or public health threat which needs to be addressed. The Secretary's responsibility to address these types of situations is clearly delineated in statutory authority. The commentor's concern appears to be in regard to paragraph (f)(2) where the lagoon is to be dewatered and the Secretary orders the implementation of specific lagoon improvements to address conditions that result in noncompliance with statutory, regulatory, or permit requirements. Changes in statutes and regulations are inevitable. Typically, statutory and regulatory changes attempt to acknowledge this concern by providing grandfather provisions and/or a waiver provision. Both of these mechanisms are included with this regulation package. Permit changes typically address enhanced monitoring/reporting requirements or address changes in facility operation. The intent is not to require modifications to a lagoon system because a "paperwork" violation of a permit has occurred. The lagoon has to be in the process of being dewatered and the Secretary has to issue an administrative order requiring the modification. The regulatory intent is to allow continued operation of a lagoon until a potential or actual environmental or public health threat becomes an issue or the situation dictates, through an opportunity such as a planned or required

dewatering of the lagoon to make modifications to address the potential or actual environmental or public health threat. There is no proposed regulatory requirement which mandates that because a lagoon is going to be dewatered that it has to be upgraded, at that time, to meet these regulations. Existing facilities which may have violated regulations in the past which are now operating in a sound manner would continue to be grandfathered under these regulations, subject to agency actions requiring cleanup or remediation activities impacting soils, surface water, or groundwater resulting from the past activities i.e., if all or a portion of a lagoon needs to be removed to address removal of contaminated soils, then modification of the lagoon might be appropriate. Typically, this type of action would be done through a voluntary agreement with the permittee or an administrative order issued by the Secretary which makes this issue moot.

Charles Benjamin:
The Kansas State University lagoon study did prove that lagoon seepage rates are usually much less than the current limit of 1/4-inch per day. However the study did not prove, nor was it designed to prove, that lagoons do not pollute deeper groundwater. Nor did the study prove that the 1/4-inch seepage standard, which has no scientific basis, actually prevents the pollution of groundwater. That's because the K-State researchers did not actually test for contamination under lagoons installed over deeper groundwaters outside the Equus Beds area.
The bifurcation of lagoon rules on the basis of geographic location is apparently based on the erroneous notion put forth by K-State researchers that groundwaters at a depth of 100 feet to 130 feet or greater, often found in Western Kansas, are somehow immune from contamination. This notion was entirely based on certain studies from the literature cited by K-State researchers. These studies were shown to be invalid or inapplicable to the High Plains Aquifer by Craig Volland in reports issued in 1998 and 2000. Relevant excerpts are attached for your convenience.
More recent data from the United States Geological Survey confirms our previous conclusion. For this analysis we have extracted data relating to Kansas. In one study the USGS analyzed 25 randomly selected domestic wells in Southwest Kansas which were qualified by adequate well construction. Our Attachment Graph 1 shows little or no correlation between depth to groundwater and nitrate values. Three of the four highest nitrate values occurred in wells where the water table was in excess of 150 feet deep.
In a second study USGS installed 27 monitoring wells in Western Kansas in proximity to irrigated fields. Since USGS installed these wells, the quality of their construction is presumably assured. The USGS selected only wells with water tables less than 200 feet down. The water table in most, though not all, of Western Kansas is less than 200 feet deep. Our attached Graph 2 shows, again, little or no correlation between depth to groundwater and nitrate values. In fact, of the 10 values that exceeded the 10 ppm contaminant level, which is the health standard, 6 were in water tables over 130 feet.

Response:
The author is correct that the KSU lagoon study did not prove, nor was it designed to prove that lagoons do not pollute deep groundwater. It is also correct the study did confirm the ¼-inch limit could typically be met throughout the state with native soils, excluding sands and gravels. The report had several significant findings which include that most lagoons were actually sealed to better than ¼-inch per day, that 1/10-inch per day can be accomplished with native soils if

moisture and compaction are closely monitored during construction, the potential for pollution is related to the depth of groundwater, and ammonia is tied up by adsorption onto clay particles while nitrates are very mobile and are not effectively controlled by clay (soil) liner systems. KDHE recognizes that seepage, and to some degree, degradation of groundwater can not be totally prevented. The regulations reflect an effort to further restrict the degree to which the potential for groundwater degradation and pollution can occur. Domestic wastewater differs significantly in strength and nitrogen content with livestock waste. The bifurcation of the regulations addressing statewide, sensitive groundwater areas, and the Equus Beds as geographical areas is an attempt to strengthen current design requirements to reflect the KSU study findings. The USDA - USGS report titled "Ground - Water Quality Beneath Irrigated Agriculture in the Central High Plains Aquifer, 1999-2000" does in fact confirm two of the KSU lagoon study findings i.e., nitrates are very mobile and depth to groundwater acts as a buffer, to a degree. Specifically it states in the Abstract, " A strong statistical correlation is shown between samples affected by irrigated agricultural sites with large rates of pesticide and nitrogen applications and shallow depths to groundwater." The Introduction notes, "Water quality in the High Plains aquifer might be vulnerable to effects from land-surface activities; however, large depths to ground water in some areas could provide a buffer from these influences. The lack of a regionally extensive geologic barrier to impede downward migration of contaminants contributes to the potential for water-quality degradation from land-surface activities."

Kay Johnson:
The proposed regulations state that existing facilities be exempt from meeting the new regulations as long as they do not pose a threat to public health or the environment. The City of Wichita agrees with this concept provided that all existing lagoons in the region of the Equus Beds have some type or periodic technical evaluation program, including some actual groundwater monitoring, to provide evidence that it is not a threat to human health or the environment.

Response:
Industrial process wastewater lagoons, since 1990, have been constructed pursuant to the KDHE Industrial Liner Policy #90-2 which requires a dual liner system with a leak detection system between the two liners. Requiring monitoring wells in this case is not warranted. The low pollution potential industrial wastewater lagoons referenced in these regulations are used to treat/retain wastewater with little potential to adversely impact groundwater and do not warrant monitoring wells. To provide a definitive evaluation that grandfathered municipal and commercial wastewater lagoons are not a pollution problem would required the design, installation, sampling and analysis of groundwater monitoring wells at each lagoon. Because of the number of earthen lagoon systems employed statewide, there would be a significant impact on KDHE staffing and resources. There would also be an fiscal and manpower resource impact on the regulated community as the estimated cost for constructing a 3-well monitoring well system would be $4,597 for shallow wells and $10,132 for deep wells. The annual cost for sampling and analysis is estimated at $225. KDHE staff would have to review the proposed placement and design for each of the monitoring wells, review and approve the proposed sampling and analysis plan, and modify the Kansas Water Pollution Control Permit to address the sampling, analysis, and reporting requirements. Staff would be required to review the annual

monitoring results and maintain a groundwater database for evaluation of groundwater quality trends. Because of State budget constraints at this time, additional staffing and resources for these tasks do not appear likely. Groundwater monitoring could be addressed as a local initiative by the cities and counties within the Equus Beds. KDHE retains the ability to investigate suspected pollution within the context of our current statutory and regulatory authority. The proposed regulations enhance current authority as it enables KDHE to require the installation and sampling of monitoring wells at any lagoon site.

Kay Johnson:
We also offer another specific comment on historical groundwater elevation data. Groundwater elevations in the Equus Beds can vary substantially with time. For instance, groundwater levels in July and August can be several feet lower than in January, due to the influence of irrigation water usage. Water levels not only vary seasonally, but also over longer periods of time. Groundwater level monitoring by the U.S. Geological Survey has recorded that some areas in the City of Wichita's wellfield had declined as much as 40 feet between 1940 and 1993, and that some of those same areas have risen more than 20 feet since 1993. Therefore it is recommended that historical maximum groundwater levels be used whenever appropriate records are available to assure that there will be a minimum of 10 feet of separation between the bottom of a lagoon and the groundwater. It is recommended that reference to historic water levels be included in the definitions and in discussions of groundwater separation distance, especially in the Equus Beds. Historic data from the USGS, GMDs or other sources may be used to establish historic groundwater elevations.
Proposed regulation 28-16-163 provides that test borings be drilled to a minimum depth of 10 feet, or to bedrock if bedrock is less than 10 feet. Because of the variation in water depths, it is recommended that test borings be drilled a minimum of 15 feet below the proposed lagoon bottom to help ascertain if groundwater separation is available, and to determine if there is a potential threat that the separation distance cannot be maintained.
If these regulations cannot be tailored to consider historic groundwater elevations, then monitoring wells should be used to verify that groundwater separation requirements are maintained as a part of the permit requirements for continued operation of new lagoons. If a new lagoon is constructed, and water levels rises then the lagoons should be closed if the 10-foot separation requirement is not maintained.

Response:
The definition of "groundwater separation distance" has been modified to address the historical vs. seasonal groundwater depth/separation issue. As noted in the comment, in some cases the historic groundwater level may have been as much as 40 feet above current groundwater levels. Continued use of groundwater at rates which created the drop in groundwater elevation could result in eliminating a site for a lagoon even though 40 feet would separate the proposed lagoon bottom and groundwater table. To address recent and past groundwater elevation increases, and to establish a time frame for which the groundwater elevation determination is to be made when groundwater elevation data is available, use of an average of the annual maximum elevations over a 10-year period of record has been specified.

With the definition of "groundwater separation distance" taking into account seasonal elevation fluctuations and consideration of the average maximum groundwater elevation over a 10-year period of record in establishing the 10 foot minimum separation requirement, it is hard to justify the need to bore or excavate holes deeper than 10 feet below the proposed lagoon bottom.

Kay Johnson:
One other specific comment, proposed regulation 28-16-161 and 28-16-162, Item (d)(1), which states that the groundwater separation distance must be greater than 10 feet is not needed, as that requirement is already identified in statement (a), which states that new lagoons will be prohibited if the groundwater separation distance is less than 10 feet.

Response:
The provision was added to address the situation where a lagoon had been approved via the variance process with groundwater separation less than 10 feet. We believe that in cases where groundwater separation is less than 10 feet an impermeable synthetic membrane liner should be employed within the Equus Beds rather than a designed soil liner system. The intent was to not automatically authorize the use of a designed soil liner system in the Equus Beds just because the 10 foot separation distance may have been waived through the variance process.

Kansas Building Industry Association (KBIA):
Regarding the proposed regulations for municipal, commercial and industrial water users over the Equus Beds:
The Kansas Building Industry Association (KBIA) represents over 2000 companies in the residential building industry in Kansas. We respectfully offer concerns with regards to the proposed regulations. We recommend that synthetic liners not be required. Research by Kansas State University and very recent research conducted through a grant by the Kansas Department of Commerce indicates that soil liners are self-sealing. KBIA submits that soils liners should provide adequate protection, even over the Equus Beds and that greater flexibility should be allowed in the regulations for soil liners. Synthetic liners are not a guarantee from leakage.
We also believe that soil liners should not require monitoring wells. We do support testing upon closure.

Response:
The Kansas Building Industry Association was contacted to obtain information regarding the referenced KSU research sponsored by a grant from the Kansas Department of Commerce and Housing. To date, there has been no response to the request. Soil liners can be "self-healing" because of the wastewater solids or biological solids which accumulate on the lagoon bottom blinding off the soil pores which inhibits fluid movement. Domestic wastewater does not carry the same solids loading or wastewater strength as does livestock wastes or open lot runoff. Synthetic liners are not a guarantee from leakage, but the installation of monitoring wells should help detect the presence of a leak to enable corrective actions to be initiated.

Sunflower Electric Power Corporation:
As proposed, provision 28-16-161(f)(1) and (2) would allow KDHE to order lagoon modifications based on the potential to pollute - as opposed to an actual occurrence of soil or

water pollution or observed impacts on human health and the environment. We do not dispute the need for regulation to protect from actual events of water or soil contamination; we believe, however it to be unreasonable, even in the very important matter of the potential to pollute the environment, to allow KDHE the authority to order repairs without evaluation of risks, materials or other factors surrounding regard such an occurrence. [KDHE staff note: This comment applies to 28-16-162(h) as well.]

Response:
KDHE believes the statutory and regulatory authority of the Secretary is not relegated to being reactive and having to document actual pollution to have impacted the environment or public health before KDHE can take action. If there is evidence that a liner system is being adversely impacted, and its integrity in regard to providing an effective seal is being stressed or compromised, it would make no sense for KDHE to wait for the liner to actually fail before requiring the permittee to begin taking action. KDHE takes its regulatory and enforcement powers seriously and does not issue administrative orders based on a whim. State administrative enforcement procedures provide the permittee a means to appeal an administrative order issued by an agency through the Kansas Administrative Procedure Act. These procedures offer the permittee the ability to have an administrative hearing, the results of which can be then be appealed and addressed in State District Court, if the permittee desires.

To provide a criteria with which to evaluate when an actual or potential environmental or public health threat may exist, a new section is proposed to be added. The proposed text will read:

"For the purpose of regulations K.A.R. 28-16-160 through K.A.R. 28-16-174, an actual or potential environmental or public health threat may be deemed to exist if physical, chemical, biological, or radiological substances, or a combination of these substances, is released into subsurface waters of the state that result in a concentration or amount of a substance in excess of the numerical criteria designated for aquatic life protection, agricultural use, or public health protection as provided in the "Kansas surface water quality standards: tables of numeric criteria," dated December 6, 2004, which is adopted by reference in K.A.R. 28-16-28e. If the background concentration of a substance is naturally occurring and is greater than the numerical criteria, the background concentration shall be considered the criteria."

Sunflower Electric Power Corporation:
KAR 28-16-161(f). Typically a grandfather clause allows existing facilities to continue operation absent reconstruction or pollution of the environment. These regulations, as proposed, are retroactive because facilities which may historically have impacted the environment but which now are operated in a sound manner may be captured in a "non-compliance" scenario. We believe that existing facilities must be allowed to continue operation under the historical conditions of their permit unless their useful life is exhausted, application is made to KDHE for reconstruction or expansion, or an actual release occurs, resulting in soil or water pollution. This allows owners and operators of impoundments certainty in environmental design and operational compliance. By contrast, these regulations place at risk all existing facilities that may be environmentally sound but which do not possess all of the requirements contained in the regulation. We believe that existing facility exemption should be just that - one that allows

existing facilities to continue operations unless a release to the soil or ground water occurs, thus indicating operational insufficiency to protect the environment. One compromise to protect the environment might be to require existing facilities to install monitoring systems under the provisions of proposed regulations KAR 28-16-172 - "Monitoring Wells," which would allow for assessment of a facilities' adequacy to protect the environment. [KDHE staff note: This comment applies to 28-16-162(h) as well.]

Response:
See the response offered above to the James Carlson's comment. The pertinent point is that the regulatory intent is to allow continued operation of an existing lagoon until a potential or actual environmental or public health threat becomes an issue, or the situation presents an opportunity, such as a planned or required dewatering of the lagoon, to make modifications. Existing facilities which may have violated regulations in the past but which are now operating in compliance, would continue to be grandfathered under these regulations, subject to any agency actions requiring cleanup or remediation activities impacting soils, surface water, or groundwater resulting from those past activities i.e., if all or a portion of a lagoon needs to be removed to address contaminated soils, then modification of the lagoon at that time might be appropriate. Typically this type of action would be done through either a voluntary agreement with the permittee or an administrative order issued by the Secretary which makes the grandfathering issue moot. The suggested compromise of installing and conducting groundwater monitoring may, or may not, prove to be a viable solution. If there is no way to delineate between "old" vs. "new" pollution i.e., new pollutants or an increase in the scope or magnitude of groundwater pollution, monitoring wells may not be a technically viable way to assess a facilities' adequacy for protecting public health or the environment.

Sunflower Electric Power Corporation:
KAR 28-16-161(g): As proposed, KAR 28-16-161(g) would give the KDHE authority to issue "Construction Permits," which is different from its historical role of issuing "Discharge Permits." It is important to note that, if promulgated as written, State oversight would occur earlier in the project process, e.g., affording review and input during "Construction Permitting." This injects the KDHE earlier into the project process, placing it in a role of design review, project planning review, material approvals, etc. giving the State review authority over additional elements earlier in the project. Because projects are by their nature time dependant, and if KDHE wishes to have codified Construction Permitting authority, it will be important to place time constraints on the review process so the regulated community may have certainty in project planning, budget management, and the other time-related elements associated with the project process. Thus, if KDHE wished to provide construction oversight, then it must be time-accountable from a regulatory perspective to complete reviews in mandated, timely manner. We are recommending a 30-day turnaround time be built into the regulations allowing for design et al. review.

Response:
We disagree with the contention the proposed regulations are creating authority for KDHE to issue "construction permits". Other KDHE environmental programs issue separate and distinct construction and operating permits. The KDHE Bureau of Water issues only a Kansas Water

Pollution Control Permit which technically addresses both the construction and operation of the wastewater treatment system. Since 1974, KDHE has had in place K.A.R. 28-16-59 which addresses the filing of water pollution control permit applications. The regulation requires the submission of an application no less than 180 days, or in sufficient time prior to commencement of such activities so as to insure compliance with state and federal law. This regulation also stipulates that a water pollution control permit application consists of a completed application form, engineering report, construction plans and specifications, and the appropriate application fee. The requirement for submitting and having an approved engineering report, construction plans, and specifications for new or modified water pollution controls is not a new requirement. The referenced provision was placed in the regulation as a reminder of this requirement, as well as addressing the need for a permit for the operation or maintenance of a wastewater treatment system. The provision is also intended to help minimize situations where land is purchased, facilities are designed, and construction is started prior to initiating the permit process and KDHE ultimately ends up denying issuance of the water pollution control permit. If a permittee wants to gamble on the permitting process, the proposed regulations do not prohibit the permittee from purchasing land or initiating construction of non-water pollution control structures or buildings at the site. KDHE can never guarantee, in advance, that a water pollution control permit will be issued or reissued. KDHE considers having the permit in hand to be cheap insurance.

Stipulating a 30 day review period for plan and specification turnaround is not practical for a number of reasons. First, the Kansas Department of Administration prohibits regulation text that is "self regulatory" in nature. The "self regulatory" provision came into effect after the referenced Bureau of Waste Management regulations were adopted. Second, stipulating a mandatory review turnaround time would lead to situations where the agency may provide technical comments, in a timely manner, that need to be addressed which may not be responded to in a timely manner by the permit applicant or their consultant. Third, current regulations, for over the last quarter century, have placed the regulated community and consultants on notice that permitting activities may take up to 180 days to complete. KDHE makes every effort to expedite reviews and the processing of permits, engineering reports, construction plans and specifications.

CETCO Lining Technologies:
Revise (d) and (e) to include membrane-backed geosynthetic clay liners.

(d) For each new or modified lagoon constructed over the Equus Beds, the permittee shall, at a minimum employ a single impermeable synthetic membrane liner **or impermeable membrane-backed geosynthetic clay liner**. Constructed soil liners ...

(e) For each new or modified lagoon, the permittee may utilize a single impermeable synthetic membrane liner **or impermeable membrane-backed geosynthetic clay liner**, in lieu of a constructed soil liner.

Response:
CETCO produces a geosynthetic clay liner product which is a bentonite and geotextile engineered composite. CETCO's patented manufacturing process utilizes a needle punched

technique which encapsulates sodium bentonite between two layers of geotextile, inhibiting the migration of the clay in its dry or hydrated state. The regulation definition of "liner" is very broad in it's scope. Because the product is a hybrid employing both geotextile membranes and bentonite, the product and its application should be approved on a case-by-case basis. The regulations do not prohibit the products use. The proposed application of this product should be approved through the engineering report and construction plan and specification review/approval process. If needed, the proposed regulations provide for a variance process where this product does not specifically meet the requirements of these regulations. Inclusion of the suggested regulation modification is not proposed.

28-16-162

Bob Myers:
The requirement of a minimum of a 10-foot separation between the bottom of a lagoon and the top of any underlying groundwater is not an overly stringent requirement, and any lagoon which is that close to the groundwater will present a significant risk to the groundwater.

Response:
No change is proposed to the 10 foot separation requirement.

Bob Meyers:
The enhanced lagoon construction standards for sensitive groundwater areas, and the further enhancement of those standards for lagoon systems constructed over the Equus Beds, is abundantly justified based upon the critical importance of these groundwater resources to the future public and economic health and vitality of our State and based upon their vulnerability.
However, those enhanced standards do not appear to be overly protective. They will not eliminate the threat of contamination from lagoon systems. Seepage rates can exceed their estimates. Lagoon liners can fail or have their integrity impaired through casualty or misuse. Overflow events can discharge lagoon contents onto unprotected soils and thereby circumvent protective liners. Thus, unless site-specific factors demonstrate otherwise, it will be important that lagoon systems in close proximity to groundwater areas be required to include monitoring wells so that any pollution to the groundwater which may occur can be promptly detected and so that remedial measures can be quickly implemented.

Response:
The proposed regulations already address site specific factors dealing with lagoon systems "in close proximity" to groundwater by prohibiting new construction when a minimum 10 foot separation can not be provided and requiring enhanced liner protection by requiring a maximum soil liner seepage rate of less than 1/10-inch per day. So long as a soil liner is employed, there will be some degree of seepage. Seepage rates at the time construction is completed should not exceed the seepage criteria as the proposed regulations require postconstruction testing to confirm compliance with the maximum allowable seepage criteria. Once a lagoon is placed into operation, failure of a soil liner is hard to detect without a means to accurately conduct a hydraulic water balance for the wastewater lagoon or the capability for monitoring the presence of seepage i.e., groundwater monitoring. The proposed regulations provide that new municipal

or commercial earthen lagoons within the Equus Beds include the design, installation, and sampling of groundwater monitoring wells. KDHE retains the authority, in the proposed regulations, to require installation and monitoring of groundwater monitoring wells when it is believed to be necessary elsewhere in the State. Monitoring the degree of leakage, on a routine basis, when a single impermeable synthetic membrane liner is employed is difficult unless damage to the liner can be observed visually or the extent of water loss is significant. The Kansas State University livestock wastewater lagoon study found that a designed soil liner system meeting ¼-inch per day can generally be constructed of natural soils statewide. The proposed regulations allow use of an earthen liner within the Equus Beds so long as special conditions are met. If a new lagoon is constructed within the Equus Beds and can not provide a designed soil liner that would meet the less than 1/10-inch per day seepage criteria because of the in situ soils or bentonite addition, a single impermeable membrane liner can be employed and groundwater monitoring should be required. The regulation has been modified to require groundwater monitoring capabilities for new lagoons employing a single impermeable synthetic membrane liner within the Equus Beds. The estimated cost for constructing a 3-well monitoring well system would be $4,597 for shallow wells and $10,132 for deep wells. The annual cost for sampling and analysis is estimated at $225. Overflows of wastewater are already addressed by current Kansas Water Pollution Control Permits with provisions requiring the reporting of insufficient available freeboard, prior to any release, and immediate notification of an actual discharge if one were to occur.

James Carlson:
In summary, the proposed Wastewater Impoundment Regulations establish three classes of industrial lagoons based on the industrial process, classification of wastewater or concentration of pollutants identified as having "pollution potential". All three classes of lagoons will require lining of some type, ranging in complexity from single, compacted-soil liners for some waste streams to complex, double synthetically-lined systems employing leachate collection, redundant cells, and engineered dewatering systems for waste streams with high pollution potential. No provisions have been included in the regulatory framework to exclude classes of impoundments with non-lined systems and innocuous waste streams, examples which include stormwater retention ponds, temperature buffering ponds, and coal-pile runoff basins.

Response:
Proposed regulation K.A.R. 28-16-162(f) is intended to address what KDHE considers to be relatively innocuous wastewater. The proposed regulation requires no more stringent criteria than the KDHE Minimum Standards of Design currently requires. The KSU livestock waste lagoon study has documented that a ¼-inch per day or less seepage rate can typically be achieved with Kansas soils, excluding sand and gravel. Based on information submitted for KDHE consideration, we propose to list coal pile stormwater runoff, coal ash, and air pollution control scrubber water associated with the use of low sulfur coal i.e., Powder River Basin coal as a low pollution potential wastewater. There is no requirement to provide a designed/constructed liner if in situ soils can provide an effective seepage barrier.

James Carlson:
With respect to the grandfathering of existing impoundments, under the proposed regulations, industries in Kansas will be allowed to continue operation of existing impoundments unless such facilities are drained and KDHE orders upgrades due to non-compliance with statutory, regulatory, permit or the general category of "protection of public health and the environment." Using the example of our Holcomb facility, our water pollution control permit is renewed every 5 years, and the most recent renewal contained additional operating and compliance provisions. The concern here is that additional requirements could be folded into permits during renewal that, over 1-2 permit cycles, could evolve to a non-compliance condition of an otherwise sound facility, placing the impoundment in jeopardy of mandated upgrades. Similarly, because a grandfather clause typically allows existing facilities to continue operations, these regulations, as proposed, appear retroactive in that facilities which may historically have impacted the environment but which are now being operated in a sound manner may be captured in a non-compliance scenario. We also believe that existing facilities should be allowed to continue operation under the historical permit conditions until their useful life is exhausted, and absent an application to KDHE for reconstruction, expansion or a current release to the environment, they should be allowed, by regulation, to continue to be operated.

Response:
The grandfathering provisions of the proposed regulations are intended to allow the continued operation of existing lagoons unless there is a potential or actual environmental or public health threat which needs to be addressed. The Secretary's responsibility to address these types of situations is clearly delineated in statutory authority. The commentor's concern appears to be in regard to paragraph (f)(2) where the lagoon is to be dewatered and the Secretary orders the implementation of specific lagoon improvements to address conditions that result in noncompliance with statutory, regulatory, or permit requirements. Changes in statutes and regulations are inevitable. Typically, statutory and regulatory changes attempt to acknowledge this concern by providing grandfather provisions and/or a waiver provision. Both of these mechanisms are included with this regulation package. Permit changes typically address enhanced monitoring/reporting requirements or address changes in facility operation. The intent is not to require modifications to a lagoon system because a "paperwork" violation of a permit has occurred. The lagoon has to be in the process of being dewatered and the Secretary has to issue an administrative order requiring the modification. The regulatory intent is to allow continued operation of a lagoon until a potential or actual environmental or public health threat becomes an issue or the situation dictates, through an opportunity such as a planned or required dewatering of the lagoon to make modifications to address the potential or actual environmental or public health threat. There is no proposed regulatory requirement which mandates that because a lagoon is going to be dewatered that it has to be upgraded, at that time, to meet these regulations. Existing facilities which may have violated regulations in the past which are now operating in a sound manner would continue to be grandfathered under these regulations, subject to agency actions requiring cleanup or remediation activities impacting soils, surface water, or groundwater resulting from these past activities i.e., if all or a portion of a lagoon needs to be removed to address removal of contaminated soils, then modification of the lagoon might be appropriate. Typically, this type of action would be done through a voluntary agreement with the permittee or an administrative order issued by the Secretary which makes this issue moot.

James Carlson:
As stated, these regulations establish three classes of industrial lagoons based on the industrial process, classification of wastewaters or concentration of pollutants. Using the proposed wastewater classifications, our Holcomb facility would fall under the double-liner standard when we undertake to reline our surface impoundments, a project scheduled to be undertaken within the next few years. By contrast, we have not observed impacts to groundwater beneath our impoundments which indicates that our 20 year old, single-lined units, in conjunction with our comprehensive maintenance program, have proven sufficiently protective of human health and the environment. It is against this backdrop of confirmed data that we question the appropriateness of the proposed classification & concentration criteria as the sole mechanism for deciding the level of containment technology, single-lined, double-lined or whatever for existing facilities.

Response:
Proposed regulation K.A.R. 28-16-162(f) is intended to address what KDHE considers to be relatively innocuous wastewater. The proposed regulation requires no more stringent criteria than the KDHE Minimum Standards of Design currently requires. The KSU livestock waste lagoon study has documented that a ¼-inch per day or less seepage rate can typically be achieved with native Kansas soils, excluding sand and gravel. Based on information submitted for KDHE consideration, we propose to list coal pile stormwater runoff, ash, and air pollution control scrubber water utilized for low sulfur coal i.e., Powder River Basin coal as a low pollution potential wastewater.

Charles Benjamin:
The Kansas State University lagoon study did prove that lagoon seepage rates are usually much less than the current limit of 1/4-inch per day. However the study did not prove, nor was it designed to prove, that lagoons do not pollute deeper groundwater. Nor did the study prove that the 1/4-inch seepage standard, which has no scientific basis, actually prevents the pollution of groundwater. That's because the K-State researchers did not actually test for contamination under lagoons installed over deeper groundwaters outside the Equus Beds area.
The bifurcation of lagoon rules on the basis of geographic location is apparently based on the erroneous notion put forth by K-State researchers that groundwaters at a depth of 100 feet to 130 feet or greater, often found in Western Kansas, are somehow immune from contamination. This notion was entirely based on certain studies from the literature cited by K-State researchers. These studies were shown to be invalid or inapplicable to the High Plains Aquifer by Craig Volland in reports issued in 1998 and 2000. Relevant excerpts are attached for your convenience.
More recent data from the United States Geological Survey confirms our previous conclusion. For this analysis we have extracted data relating to Kansas. In one study the USGS analyzed 25 randomly selected domestic wells in Southwest Kansas which were qualified by adequate well construction. Our Attachment Graph 1 shows little or no correlation between depth to groundwater and nitrate values. Three of the four highest nitrate values occurred in wells where the water table was in excess of 150 feet deep.
In a second study USGS installed 27 monitoring wells in Western Kansas in proximity to irrigated fields. Since USGS installed these wells, the quality of their construction is presumably

assured. The USGS selected only wells with water tables less than 200 feet down. The water table in most, though not all, of Western Kansas is less than 200 feet deep. Our attached Graph 2 shows, again, little or no correlation between depth to groundwater and nitrate values. In fact, of the 10 values that exceeded the 10 ppm contaminant level, which is the health standard, 6 were in water tables over 130 feet.

Response:
The author is correct that the KSU lagoon study did not prove, nor was it designed to prove that lagoons do not pollute deep groundwater. It is also correct the study did confirm the ¼-inch limit could typically be met throughout the state with native soils, excluding sands and gravels. The report had several significant findings which include that most lagoons were actually sealed to better than ¼-inch per day, that 1/10-inch per day can be accomplished with native soils if moisture and compaction are closely monitored during construction, the potential for pollution is related to the depth of groundwater, and ammonia is tied up by adsorption onto clay particles while nitrates are very mobile and are not effectively controlled by clay (soil) liner systems. KDHE recognizes that seepage, and to some degree, degradation of groundwater can not be totally prevented. The regulations reflect an effort to further restrict the degree to which the potential for groundwater degradation and pollution can occur. Domestic wastewater differs significantly in strength and nitrogen content with livestock waste. The bifurcation of the regulations addressing statewide, sensitive groundwater areas, and the Equus Beds as geographical areas is an attempt to strengthen current design requirements to reflect the KSU study findings. The USDA - USGS report titled "Ground - Water Quality Beneath Irrigated Agriculture in the Central High Plains Aquifer, 1999-2000" does in fact confirm two of the KSU lagoon study findings i.e., nitrates are very mobile and depth to groundwater acts as a buffer, to a degree. Specifically it states in the Abstract, " A strong statistical correlation is shown between samples affected by irrigated agricultural sites with large rates of pesticide and nitrogen applications and shallow depths to groundwater." The Introduction notes, "Water quality in the High Plains aquifer might be vulnerable to effects from land-surface activities; however, large depths to ground water in some areas could provide a buffer from these influences. The lack of a regionally extensive geologic barrier to impede downward migration of contaminants contributes to the potential for water-quality degradation from land-surface activities."

Kay Johnson:
The proposed regulations state that existing facilities be exempt from meeting the new regulations as long as they do not pose a threat to public health or the environment. The City of Wichita agrees with this concept provided that all existing lagoons in the region of the Equus Beds have some type or periodic technical evaluation program, including some actual groundwater monitoring, to provide evidence that it is not a threat to human health or the environment.

Response:
Industrial process wastewater lagoons, since 1990, have been constructed pursuant to the KDHE Industrial Liner Policy #90-2 which requires a dual liner system with a leak detection system between the two liners. Requiring monitoring wells in this case is not warranted. The low pollution potential industrial wastewater lagoons referenced in these regulations are used to

treat/retain wastewater with little potential to adversely impact groundwater and do not warrant monitoring wells. To provide a definitive evaluation that grandfathered municipal and commercial wastewater lagoons are not a pollution problem would required the design, installation, sampling and analysis of groundwater monitoring wells at each lagoon. Because of the number of earthen lagoon systems employed statewide, there would be a significant impact on KDHE staffing and resources. There would also be an fiscal and manpower resource impact on the regulated community as the estimated cost for constructing a 3-well monitoring well system would be $4,597 for shallow wells and $10,132 for deep wells. The annual cost for sampling and analysis is estimated at $225. KDHE staff would have to review the proposed placement and design for each of the monitoring wells, review and approve the proposed sampling and analysis plan, and modify the Kansas Water Pollution Control Permit to address the sampling, analysis, and reporting requirements. Staff would also be required to review the annual monitoring results and maintain a groundwater database for evaluation of groundwater quality trends. Because of State budget constraints at this time, additional staffing and resources for these tasks do not appear likely. Groundwater monitoring could be addressed as a local initiative by the cities and counties within the Equus Beds. KDHE retains the ability to investigate suspected pollution within the context of our current statutory and regulatory authority. The proposed regulations enhance current authority as it enables KDHE to require the installation and sampling of monitoring wells at any lagoon site.

Kay Johnson:
We also offer another specific comment on historical groundwater elevation data. Groundwater elevations in the Equus Beds can vary substantially with time. For instance, groundwater levels in July and August can be several feet lower than in January, due to the influence of irrigation water usage. Water levels not only vary seasonally, but also over longer periods of time. Groundwater level monitoring by the U.S. Geological Survey has recorded that some areas in the City of Wichita's wellfield had declined as much as 40 feet between 1940 and 1993, and that some of those same areas have risen more than 20 feet since 1993. Therefore it is recommended that historical maximum groundwater levels be used whenever appropriate records are available to assure that there will be a minimum of 10 feet of separation between the bottom of a lagoon and the groundwater. It is recommended that reference to historic water levels be included in the definitions and in discussions of groundwater separation distance, especially in the Equus Beds. Historic data from the USGS, GMDs or other sources may be used to establish historic groundwater elevations.
Proposed regulation 28-16-163 provides that test borings be drilled to a minimum depth of 10 feet, or to bedrock if bedrock is less than 10 feet. Because of the variation in water depths, it is recommended that test borings be drilled a minimum of 15 feet below the proposed lagoon bottom to help ascertain if groundwater separation is available, and to determine if there is a potential threat that the separation distance cannot be maintained.
If these regulations cannot be tailored to consider historic groundwater elevations, then monitoring wells should be used to verify that groundwater separation requirements are maintained as a part of the permit requirements for continued operation of new lagoons. If a new lagoon is constructed, and water levels rises then the lagoons should be closed if the 10-foot separation requirement is not maintained.

Response:
The definition of "groundwater separation distance" has been modified to address the historical vs. seasonal groundwater depth/separation issue. As noted in the comment, in some cases the historic groundwater level may have been as much as 40 feet above current groundwater levels. Continued use of groundwater at rates which created the drop in groundwater elevation could result in eliminating a site for a lagoon even though 40 feet would separate the proposed lagoon bottom and groundwater table. To address recent and past groundwater elevation increases, and to establish a time frame for which the groundwater elevation determination is to be made when groundwater elevation data is available, use of an average of the annual maximum elevations over a 10-year period of record has been specified.

With the definition of "groundwater separation distance" taking into account seasonal elevation fluctuations and consideration of the average maximum groundwater elevation over a 10-year period of record in establishing the 10 foot minimum separation requirement, it is hard to justify the need to bore or excavate holes deeper than 10 feet below the proposed lagoon bottom.

Kay Johnson:
One other specific comment, proposed regulation 28-16-161 and 28-16-162, Item (d)(1), which states that the groundwater separation distance must be greater than 10 feet is not needed, as that requirement is already identified in statement (a), which states that new lagoons will be prohibited if the groundwater separation distance is less than 10 feet.

Response:
The provision was added to address the situation where a lagoon had been approved via the waiver process with groundwater separation less than 10 feet. We believe that in cases where groundwater separation is less than 10 feet an impermeable synthetic membrane liner should be employed rather than a designed soil liner system. The intent was to not automatically authorize the use of a design soil liner system just because the 10 foot separation distance may have been waived through the variance process.

Kansas Building Industry Association (KBIA):
Regarding the proposed regulations for municipal, commercial and industrial water users over the Equus Beds:
The Kansas Building Industry Association (KBIA) represents over 2000 companies in the residential building industry in Kansas. We respectfully offer concerns with regards to the proposed regulations. We recommend that synthetic liners not be required. Research by Kansas State University and very recent research conducted through a grant by the Kansas Department of Commerce indicates that soil liners are self-sealing. KBIA submits that soils liners should provide adequate protection, even over the Equus Beds and that greater flexibility should be allowed in the regulations for soil liners. Synthetic liners are not a guarantee from leakage.
We also believe that soil liners should not require monitoring wells. We do support testing upon closure.

Response:
The Kansas Building Industry Association was contacted to obtain information regarding the referenced KSU research sponsored by a grant from the Kansas Department of Commerce and Housing. To date, there has been no response to the request. Soil liners can be "self-healing" because of the wastewater solids or biological solids which accumulate on the lagoon bottom blinding off the soil pores which inhibits fluid movement. Domestic wastewater does not carry the same solids loading or wastewater strength as does livestock wastes or open lot runoff. Synthetic liners are not a guarantee from leakage, but the installation of monitoring wells should help detect the presence of a leak to enable corrective actions to be initiated.

Sunflower Electric Power Corporation:
We support the concept of requiring appropriate, reasonable and consistent lining standards for surface impoundments that pose an environmental threat to groundwater of the State. We do not support the wholesale application of regulations to innocuous wastewaters or lining requirements in geographically-diverse areas devoid of groundwater, nor do we support requirements for mandated construction techniques absent the establishment of technical flexibility that may be applied in site-specific or low-risk conditions.

Response:
In general we agree with the tenor of the comment but we need to point out that another purpose of the proposed regulations is to protect public health and the environment as well as protecting groundwater. Lagoon sealing is needed to address the lagoon's structural integrity as well. Excessive seepage through a lagoon dike may weaken the dike which could result in structural failure and loss of the entire lagoon contents. Absence of groundwater does not alleviate the concern regarding lagoon sealing. Lagoons constructed over fractured limestone, with little or no groundwater located immediately beneath them can, if not adequately sealed, provide a pathway for fluids from the lagoon to travel long distances before potential impacting a perched groundwater table or surfacing and impacting springs , surface drainage, or streams. We believe the multi-tiered approach for soil liners and the designation of low pollution potential industrial wastes adequately addresses this concern. In addition there is always the "variance process" addressed in proposed K.A.R. 28-16-174 that can be employed to address "special" site-specific conditions.

Sunflower Electric Power Corporation:
Regulation K.A.R. 28-16-162 (f)(5)(C, D), as written, could result in a lining requirement for waste streams that other, competing facilities are allowed to discharge to surface waters under the NPDES System. This disparity could result in economic disadvantages over the sphere of the regulated community, particularly new facilities. Also, it is conceivable that the dissolved solids content of a given waste stream could be elevated above water quality criteria K.A.R. 28-16-162 (f)(5)(C) but still not be sufficiently elevated such as to forego use for land application K.A.R. 28-16-162 (f)(5)(D). Because it is not possible to capture all current or future waste streams within the scope of water quality criteria, we suggest a provision be included in the "General Provisions" section that affords industry the opportunity to make a demonstration to KDHE that an innocuous waste stream does not pose a threat yet has not been included on the

list. This demonstration could be based upon toxicity, water quality or other factors as standardized by EPA.

Response:
Wastewater quality prior to and during treatment may be totally different than treated wastewater effluent quality. Lagoon systems that do not discharge on a routine basis or are dewatered via irrigation, provide a sink where certain non-degradable pollutants will concentrate because of evaporation. Developing a comprehensive criteria that will address the numerous potential combinations of pollutants, their varying levels of toxicity and mobility, the presence/depth to groundwater, and their compatibility for use with soil liners is not practical. The variance process provides the mechanism by which these concerns and variables can be effectively addressed. The regulations establish minimum criteria, which if employed, should expedite project reviews, permit processing, and provide the regulated community with a ceratin degree of surety. Consideration of more innovative, new, and unproven designs or technologies are allowed, but the burden for proving the proposal is protective of public health and the environment is on the design engineer and project owner and may require additional time for KDHE to review and evaluate.

Sunflower Electric Power Corporation:
KAR 28-16-162(f): If an industry proposes to discharge a waste stream with moderate pollution potential and they are proposing a site in a geographic location of the State that does not have groundwater resources, such as in the Smoky Hills Region, they would be required to install single or double-lined lagoons systems even though a low pollution threat to groundwater exists. By contrast, KDHE has appropriately taken into account geographic conditions in proposing standards for the Equus-Beds Region of Kansas. Because there may be future industries which produce innocuous waste streams having very low pollution potential, and because there are regions of Kansas which do not have groundwater resources, provision should be made allowing industry the
opportunity to install, either by way of KDHE classification (category) or by variance, an un-lined system for innocuous waste streams in certain geographic regions of the State.

Response:
Developing a comprehensive criteria that will address the numerous potential combinations of pollutants, their varying levels of toxicity and mobility, the presence/depth to groundwater, and their compatibility for use with soil liners is not practical. The variance process provides the mechanism by which these concerns and variables can be effectively addressed. The regulations establish minimum criteria, which if employed, should expedite project reviews, permit processing, and provide the regulated community with a certain degree of surety. Consideration of more innovative, new, and unproven designs or technologies are allowed, but the burden for proving the proposal is protective of public health and the environment is on the design engineer and project owner and may require additional time for KDHE to review and evaluate.

Sunflower Electric Power Corporation:
KAR 28-16-162(f): The electric utility and foundry industries typically employ unlined and uncovered coal storage piles at their facilities. During inclement weather, these temporary fuel

sources can be exposed to leach-through and material transport. Attachments A and B provide laboratory analyses of coal-pile leachate obtained from Electric Power Research Institute. It is conceivable that these regulations could capture coal-pile retention lagoons within the universe of lagoons requiring lining, even though minute or non-detect concentrations of metals and salts are observed in the leachate. We are uncertain if it was KDHE's specific intent not to include coal piles in the exemption; therefore we are suggesting KDHE consider an addition to KAR 28-16-162 (f) which provides a category specifically exempting coal-piles and coal-pile retention ponds, where coal is stored as a fuel source.

Response:
Coal pile stormwater runoff, coal ash, and air pollution control scrubber wastes have been included as low pollution potential industrial wastewater sources so long as low sulfur Powder River Basin (PRB) coal is utilized.

Sunflower Electric Power Corporation:
KAR 28-16-162(f)(5)(B): In the proposed regulation, the phrase "significantly above" is arbitrary, as no standard has been presented as to what constitutes "significantly above." We suggest guidelines be included through which this may be quantified - or otherwise assessed - thus providing surety for regulated community, environmental groups and other interested parties.

Response:
The term "significantly" will be removed from (f)(4).
In (f)(5)(B), the term "significantly" is being retained as the TDS and salt concentration from recirculated water systems concentrate these pollutants through evaporation. No criteria or standard for "significantly" is being provided to allow maximum flexibility for KDHE to consider control options by the design engineer or permittee.

Sunflower Electric Power Corporation:
Provision KAR 28-16-162 (h)(1) allows continued operation of existing impoundments unless KDHE determines a public health threat exists or data demonstrates the "potential [for] soil and water pollution." The latter half of subsection (h)(1) is both redundant and introduces ambiguity because the KDHE must necessarily have relied on data demonstrating soil or water pollution to make a determination that an environmental or public health exists. Subsection (h)(1) would also give KDHE the authority to order lagoon modifications based on the potential for soil or water pollution, as opposed to being required to rely on an actual pollution occurrence. Because the definition of what constitutes "potential" can vary throughout staff changes and time, we suggest a reasonableness standard be included in the regulations which quantify what criteria the KDHE will use to determine whether operation of a lagoon threatens environmental or public health - thus providing surety for the regulated community, environmental groups and other interested parties.

Response:
Data may show evidence that a problem exists but has not reached the level or significance of being an actual public health or environmental threat i.e., the initial sign of lagoon leakage.

KDHE believes the statutory and regulatory authority of the Secretary is not relegated to being reactive and having to document actual pollution to have impacted the environment or public health before KDHE can take action. If there is evidence that a liner system is being adversely impacted, and its integrity in regard to providing an effective seal is being stressed or compromised, it would make no sense for KDHE to wait for the liner to actually fail before requiring the permittee to begin taking action. KDHE takes its regulatory and enforcement powers seriously and does not issue administrative orders based on a whim. State administrative enforcement procedures provide the permittee a means to appeal an administrative order issued by an agency through the Kansas Administrative Procedure Act. These procedures offer the permittee the ability to have an administrative hearing, the results of which can be then be appealed and addressed in State District Court, if the permittee desires.

To provide a criteria with which to evaluate when an actual or potential environmental or public health threat may exist, a new section is proposed to be added. The proposed text will read:

"For the purpose of regulations K.A.R. 28-16-160 through K.A.R. 28-16-174, an actual or potential environmental or public health threat may be deemed to exist if physical, chemical, biological, or radiological substances, or a combination of these substances, is released into subsurface waters of the state that result in a concentration or amount of a substance in excess of the numerical criteria designated for aquatic life protection, agricultural use, or public health protection as provided in the "Kansas surface water quality standards: tables of numeric criteria," dated December 6, 2004, which is adopted by reference in K.A.R. 28-16-28e. If the background concentration of a substance is naturally occurring and is greater than the numerical criteria, the background concentration shall be considered the criteria."

Sunflower Electric Power Corporation:
KAR 28-16-162(h)(2) - Under subsection (h)(2), industries in Kansas will be allowed to continue operation of existing impoundments unless, due to noncompliance with statutory, regulatory, or permit requirements, KDHE orders the implementation of specific lagoon improvements requiring modification, replacement, or expansion of an industrial wastewater lagoon, resulting in a dewatering of that lagoon. The net result of this exception is that KDHE could force an upgrade of existing lagoons with only a potential threat to environment, public health or merely by implementing new regulatory or permit requirements unrelated to potential or actual environmental threats. This essentially eliminates the grandfathering provision which leads to a situation where the exception swallows the rule. As illustration, consider our Holcomb facility which has a Water Pollution Control Permit under the NPDES System. This Permit is renewed every 5 years. During the most recent renewal, the revised Permit contained additional operating and compliance requirements. The concern with the grandfather provision is that similar requirements could be folded into future permits during renewal, which over 1 - 2 permit cycles could lead to a non-compliance condition of an otherwise sound facility - placing the impoundment within the scope of potentially mandated upgrades. A grandfather clause typically allows existing facilities to continue operation; thus these regulations, as proposed, are retroactive because facilities that historically may have impacted the environment, but now are being operated in a sound manner, may be captured in a future "non-compliance" scenario.

We believe existing facilities must be allowed to continue operation under the historical permit conditions until their useful life is exhausted, an application is made to KDHE for reconstruction/expansion, or an actual release occurs resulting in soil or water pollution. This approach would allow operators of impoundments certainty when undertaking environmental designs and in operational compliance. By contrast, this regulation places at risk all existing facilities that may be environmentally sound but do not possess all of the requirements contained in the regulation. We believe that any existing facility exemption should be just that - allowing existing facilities to continue operation unless a release to the soil and ground water occurs, thus indicating operational insufficiency to protect the environment. One compromise to protect the environment might be to require existing facilities to install monitoring systems under the provisions of proposed regulation KAR 28-16-172 - "Monitoring Wells," which would allow for assessment of a facilities' adequacy to protect the environment.

Response:

The grandfathering provisions of the proposed regulations are intended to allow the continued operation of existing lagoons unless there is a potential or actual environmental or public health threat which needs to be addressed. The Secretary's responsibility to address these types of situations is clearly delineated in statutory authority. The commentor's concern appears to be in regard to paragraph (h)(2) where the lagoon is to be dewatered and the Secretary orders the implementation of specific lagoon improvements to address conditions that result in noncompliance with statutory, regulatory, or permit requirements. Changes in statutes and regulations are inevitable. Typically statutory and regulatory changes attempt to acknowledge this concern by providing grandfather provisions and/or a waiver provision. Both of these mechanism are included with this regulation package. Permit changes typically address enhanced monitoring/reporting requirements or address changes in facility operation. The intent is not to require modifications to a lagoon system because a "paperwork" violation of a permit has occurred. The lagoon has to be in the process of being dewatered and the Secretary has to issue an administrative order requiring the modification. The regulatory intent is to allow continued operation of a lagoon until a potential or actual environmental or public health threat becomes an issue or the situation dictates, through an opportunity such as a planned or required dewatering of the lagoon to make modifications to address the potential or actual environmental or public health threatr. There is no proposed regulatory requirement which mandates that because a lagoon is going to be dewatered that it has to be upgraded, at that time, to meet these regulations. Existing facilities which may have violated regulations in the past which are now operating in a sound manner would continue to be grandfathered under these regulations, subject to agency actions requiring cleanup or remediation activities impacting soils, surface water, or groundwater resulting from the past activities i.e., if all or a portion of a lagoon needs to be removed to address removal of contaminated soils, then modification of the lagoon might be appropriate. Typically, this type of action would be done through a voluntary agreement with the permittee or an administrative order issued by the Secretary which makes this issue moot.

The pertinent point is that the regulatory intent is to allow continued operation of an existing lagoon until a potential or actual environmental or public health threat becomes an issue, or the situation provides an opportunity such as a planned or required dewatering of the lagoon to make modifications. Existing facilities which may have violated regulations in the past but which are now operating in compliance, would continue to be grandfathered under these regulations,

monitoring. For energy centers, these systems would be expensive primarily because of their size. If installed at an energy center, the additional protection to the environment, in our opinion, would be minimal and would not justify the significant additional expense.

As proposed, if the following kinds of lagoons are not grandfathered or have not been issued a variance, they would require synthetic double liners with interstitial monitoring. These storm water detention ponds, non-contact cooling water ponds for thermal dissipation and coal pile runoff ponds. We encourage KDHE to consider listing these kinds of ponds as low pollution potential ponds.

The storm water detention ponds at Westar Energy's energy centers are not much different than those found at construction sites or those lagoons listed by the proposed regulations as low pollution potential. As part of the NPDES discharge permits for Westar Energy's Energy Centers, some of these lagoons were required to be monitored. The monitoring of these lagoons during the past two permit renewal cycles have proved that their contents were innocuous and the monitoring requirements were dropped for the current permits.

The only difference between Westar Energy's non-contact cooling water ponds and those non-contact cooling water ponds listed as low pollution potential ponds by the proposed regulations, is that Westar Energy's non-contact cooling water contains very small quantities of scale inhibitors and sometimes may contain small quantities of corrosion inhibitors. The aquatic toxicity of these chemicals and their concentrations have been routinely checked by KDHE during permit renewals. Additionally, Westar Energy's non-contact cooling waters have routinely passed many whole effluent toxicity (W.E.T.) tests as a condition of permit renewal. An example of non-contact cooling/wastewater systems currently installed at an energy center is the large lake at Wolf Creek Nuclear Power Plant near Burlington, KS. Other examples are the large ponds at Westar Energy's Murray Gill Energy Center near Wichita, KS and the small , wetland ponds at Westar Energy's Jeffery Energy Center near St. Marys, KS.

Lastly, coal pile runoff ponds are not listed as low pollution ponds by the proposed regulations. Our reasoning, and data, that supports these ponds be listed as low pollution ponds has been submitted as separate comments in a letter to KDHE dated September 7, 2004 and signed with five other electric utilities.

Other than requesting that the above kinds of lagoons be listed as low pollution potential by the proposed regulations, a primary concern is that KDHE will not continue to implement requests for variances in a consistent and risk-based manner as offered by Section 28-16-174 of the proposed regulations.

Response:
Based on information submitted for KDHE's review, the proposed regulations have been modified to include coal pile stormwater runoff, ash, and air pollution control scrubber ponds as a low pollution potential industrial wastes requiring a designed soil liner meeting the ¼-inch per day criteria so long as low sulfur PBR coal is involved. Because of the wide variability in the types, application rates, and active ingredients in cooling water additives, these will have to be

evaluated on a case-by-case basis. The variance process can be used to address specific cooling water chemicals being employed when earthen lagoons are proposed or are involved.

Electric Utilities of Kansas:
KAR 28-16-162(f): Based on the coal analysis that all of the Kansas electric utilities have used for the past 5-10 years, no significant concentrations of heavy metals have been known to exist in the Powder River Basin (PRB) coal that has been used. This can be demonstrated by the NPDES permit renewals on file at KDHE, by the enclosed Electric Power Research Institute (EPRI) data from EPRI's Pisces database, and by the recent test results from two of Westar Energy's coal pile runoff ponds. Perhaps in the distant past, coal may have been used that could have contained significant concentrations of heavy metals, however, in the current regulatory climate, it is doubtful if this kind of coal will ever be burned again.

Coal pile runoff provide coal pile runoff control that is similar to many of the sediment control ponds listed as "low pollution potential" ponds by the proposed regulation. As written, no matter how clean the runoff pond from a coal pile is (in many ways a coal pile is a large activated carbon filter), new or expanded coal pile runoff ponds will be required to install double liners with interstitial monitoring. Unless a variance is granted, any kind of compacted soil liner will not be an option. This seems unnecessary.

The following addition to low pollution potential should effect only a small part of the regulatory universe that is this regulation addresses and is very specific to the electric generation industry. A suggested improvement would be to add another category for low pollution potential ponds.

"(5) coal pile runoff control ponds for PRB coal as used by electric utilities."

Response:
The proposed regulations have been modified to add coal pile stormwater runoff, coal ash, and air pollution control scrubber ponds as low pollution potential wastes.

CETCO Lining Technologies:
Revise (d), (e), and (g) to include membrane-backed geosynthetic clay liners.

(d) For each new or modified lagoon constructed over the Equus Beds and utilized solely for the containment or treatment of domestic sewage, the permittee shall, at a minimum, employ a single impermeable synthetic membrane liner or **impermeable membrane-backed geosynthetic clay liner**. Constructed soil liners may be employed if all of the following conditions are met ...

(e) For each new or modified lagoon utilized solely for the containment or treatment of domestic sewage, the permittee may utilize a single impermeable synthetic membrane liner **or impermeable membrane-backed geosynthetic clay liner**, in lieu of a constructed soil liner.

(g) Each new industrial wastewater lagoon utilized for the containment of treatment of industrial process wastewater shall utilize an impermeable membrane liner system with a maximum

synthetic membrane liner leakage rate **or impermeable membrane-backed geosynthetic clay liner system with a maximum membrane-backed geosynthetic clay liner leakage rate**.

Note: (g)(1) and (2) can be dropped because maximum synthetic membrane liner leakage rate and maximum membrane-backed geosynthetic clay liner leakage rate have already been defined in 28-16-160.

Response:
CETCO produces a geosynthetic clay liner product which is a bentonite and geotextile engineered composite. CETCO's patented manufacturing process utilizes a needle punched technique which encapsulates sodium bentonite between two layers of geotextile, inhibiting the migration of the clay in its dry or hydrated state. The regulation definition of "liner" is very broad in it's scope. Because the product is a hybrid employing both geotextile membranes and bentonite, the product and its application should be approved on a case-by-case basis. The regulations do not prohibit the products use. The proposed application of this product should be approved through the engineering report and construction plan and specification review/approval process. If needed, the proposed regulations provide for a variance process where this product does not specifically meet the requirements of these regulations. Inclusion of the suggested regulation modification is not proposed.

28-16-163

Kay Johnson:
Proposed regulation 28-16-163 provides that test borings be drilled to a minimum depth of 10 feet, or to bedrock if bedrock is less than 10 feet. Because of the variation in water depths, it is recommended that test borings be drilled a minimum of 15 feet below the proposed lagoon bottom to help ascertain if groundwater separation is available, and to determine if there is a potential threat that the separation distance cannot be maintained.
If these regulations cannot be tailored to consider historic groundwater elevations, then monitoring wells should be used to verify that groundwater separation requirements are maintained as a part of the permit requirements for continued operation of new lagoons. If a new lagoon is constructed. and water levels rises then the lagoons should be closed if the 10-foot separation requirement is not maintained.

Response:
With the definition of "groundwater separation distance" taking into account seasonal elevation fluctuations consideration of the average maximum groundwater elevation over a 10-year period of record in establishing the 10 foot minimum separation requirement, it is hard to justify the need to bore or excavate holes deeper than 10 feet below the proposed lagoon bottom.

28-16-164

28-16-165

Westar Energy:
KAR 28-16-165(c) and 28-16-165(d)(2).

Section 28-16-165(c): "The certification (of construction) shall be based on observations by the licensed professional engineer, or designee, during construction ..."

Section 28-16-165(d)(2): "The post construction testing of the soil liner shall be conducted by a licensed professional engineer or a designee, under that individuals direct supervision."

We think that each of these sections should require that designees' of the P.E. should be under the direct supervision of a professional engineer.

Response:
We agree. Both (c) and (d)(2) contain the phrase, "... shall be conducted by the licensed professional engineer or a designee, under that individual's direct supervision." To provide clarification, "under that individual's" will be modified to read, "under the licensed professional engineer's".

MKEC Engineering Consultants, Inc.:
KAR 28-16-165: We suggest that the rules indicate the types of postconstruction leakage testing protocols that are considered appropriate for synthetic membrane and soil liners in municipal, commercial, and industrial lagoons. Determination of the maximum leakage rate of 1/64th inch for impermeable membranes and 1/10th inch for soil liners can be affected by variables such as wind, wave action, water temperature, atmospheric pressure, relative humidity and evaporation that are difficult to measure and extrapolate to the lagoon. To achieve a degree of accuracy to 1/64th inch, these factors may need to be considered. We also request that the rules specify the course of action if the test results do not meet the required 1/64th inch (impermeable membrane) or 1/10th inch (soil liner) requirements.

Response:
There are a number of test procedures established by various organizations such as American Society for Testing and Materials (ASTM). The commentor is correct in noting there are many variables that can potentially impact lagoon seepage/leak testing. Dual liner systems with intermediate leak detection systems have a readily available and effective means to monitor leakage. Because of the numerous variables involved in testing, KDHE believes a site-specific testing protocol should be designed to account for the various site-specific conditions i.e., size of the wastewater lagoon, time of year when testing will occur, sensitivity of the monitoring equipment, and the proposed duration of the test. At this time, KDHE is not proposing to require specific test procedures to be employed.

28-16-166

Legislative Joint Committee on Administrative Rules and Regulations:
KAR 28-16-166. In subsection (f), clarify when these standards are to be used. (See also KAR 28-16-167(j) and 28-16-169(b).

Response:
Modified as requested.

Legislative Joint Committee on Administrative Rules and Regulations:
In subsection (i)(1), it appears that the word "threat" was left out after the first use of the word "imminent".

Response:
"Threat" was added.

CETCO Lining Technologies:
28-16-166. Requirements for impermeable synthetic membrane liners **and impermeable membrane-backed geosynthetic clay liners** in municipal or commercial wastewater treatment system lagoons.

Amend title as shown above and add new (b) as follows. Note that UV resistence is substituted with requirements for minimum of 12 inch cover material.

(b) The following requirements shall apply to municipal or commercial impermeable membrane-backed geosynthetic clay liners:

- **(1) The liner shall be at least 0.25 inches in thickness.**
- **(2) The liner shall be covered with a minimum 12 inches of soil cover.**
- **(3) The engineer designing the wastewater lagoon shall obtain a certification from the liner manufacturer that includes the following:**
  - **(A) Confirmation that the specified liner is compatible for use with the proposed wastewater to be retained or treated; and**
  - **(B) the manufacturer's estimated leakage, permeability, or transmissivity rate of the specified liner expressed in units of volume per area per time (gallons per acre per day) for a properly installed liner. The leakage, permeability, or transmissivity rate shall reflect the expected rate of movement of fluids through a membrane-backed geosynthetic clay liner when considering the properties of the liner material, liner thickness, normally expected manufacturing defects in the liner material, and normally expected defects associated with seaming and installation process.**

(b) through (i) become (c) through (j).

Add to (j) the following.
(j)(1)(B) the integrity of the impermeable synthetic membrane liner **or impermeable membrane-backed geosynthetic clay liner**.

Response:
CETCO produces a geosynthetic clay liner product which is a bentonite and geotextile engineered composite. CETCO's patented manufacturing process utilizes a needle punched technique which encapsulates sodium bentonite between two layers of geotextile, inhibiting the migration of the clay in its dry or hydrated state. The regulation definition of "liner" is very broad in it's scope. Because the product is a hybrid employing both geotextile membranes and bentonite, the product and its application should be approved on a case-by-case basis. The regulations do not prohibit the products use. The proposed application of this product should be approved through the engineering report and construction plan and specification review/approval process. If needed, the proposed regulations provide for a variance process where this product does not specifically meet the requirements of these regulations. Inclusion of the suggested regulation modification is not proposed.

28-16-167

Legislative Joint Committee on Administrative Rules and Regulations:
KAR 28-16-166. In subsection (f), clarify when these standards are to be used. (See also KAR 28-16-167(j) and 28-16-169(b).

Response:
Modified as requested.

Sunflower Electric Power Corporation:
We support the concept of requiring appropriate, reasonable and consistent lining standards for surface impoundments that pose an environmental threat to groundwater of the State. We do not support the wholesale application of regulations to innocuous wastewaters or lining requirements in geographically-diverse areas devoid of groundwater, nor do we support requirements for mandated construction techniques absent the establishment of technical flexibility that may be applied in site-specific or low-risk conditions.

Response:
In general we agree with the tenor of the comment but we need to point out that another purpose of the proposed regulations is to protect public health and the environment as well as protecting groundwater. Lagoon sealing is needed to address the lagoon's structural integrity as well. Excessive seepage through a lagoon dike may weaken the dike which could result in structural failure and loss of the entire lagoon contents. Absence of groundwater does not alleviate the concern regarding lagoon sealing. Lagoons constructed over fractured limestone, with little or no groundwater located immediately beneath them can, if not adequately sealed, provide a pathway for fluids from the lagoon to travel long distances before potential impacting a perched groundwater table or surfacing and impacting springs , surface drainage, or streams. We believe the multi-tiered approach for soil liners and the designation of low pollution potential industrial

subject to any agency actions requiring cleanup or remediation activities impacting soils, surface water, or groundwater resulting from the past activities i.e., if all or a portion of a lagoon needs to be removed to address contaminated soils, then modification of the lagoon, at that time, might be appropriate. Typically this type of action would be done through either a voluntary agreement with the permittee or an administrative order issued by the Secretary which makes the grandfathering issue moot. The noted compromise of installing and conducting groundwater monitoring may, or may not, prove to be a viable solution. If there is no way to delineate between "old" vs. "new" pollution i.e., new pollutants or an increase in the magnitude of groundwater pollution, monitoring wells may not be a technically viable way to assess a facilities' adequacy for protecting public health or the environment.

Sunflower Electric Power Corporation:
KAR 28-16-162(h): Sunflower maintains four synthetically-lined lagoons at our Holcomb Station. Each lagoon each utilizes a single, 36-mil hypalon liner as a means of containing wastewater. The liners in our lagoons are approximately 22 years old, and as part of a maintenance program Sunflower anticipates the need to replace the liners within the next 2-4 year period. If the regulations are promulgated as proposed, Sunflower will be obligated to upgrade to a double-lined system with leachate collection, even though we have not observed impacts to groundwater in a monitoring-well network adjacent to our lagoons. Because groundwater monitoring data from our site demonstrates the adequacy of the single-lined system, we question the appropriateness of requiring a double-lined system for our site, particularly in the context of a good environmental compliance record.

Response:
The proposed regulations have been modified to address use of a soil liner or single impermeable synthetic membrane liner for coal pile stormwater runoff, ash, and air pollution control scrubber wastewater associated with the use of low sulfur PRB coal. If an adequate groundwater monitoring well system is in place and would provide an effective means to monitor for leakage, a single impermeable synthetic membrane liner may be considered for use at the site for other industrial process wastewaters. The variance process spelled out in K.A.R. 28-16-174 can be utilized for such a site-specific proposal.

Westar Energy:
KAR 28-16-162(f): Westar Energy has six operating energy centers and one energy center in reserve that will, to some degree, be affected by the proposed regulations. Because of the grandfathering provisions offered by the proposed regulations, no immediate capital expenditures will be required. However, if an expansion or modification of any existing lagoon is necessary or a new lagoon is constructed, additional capital expenditure above the 'expected costs' may be required by the proposed regulation.

According to the Kansas State University (KSU) research referenced by the proposed regulations, these costs would be significant - if the lagoon would be classified as low pollution potential. generally compaction of a soil and amendment liner would be required. However, if a variance from the double liner and interstitial monitoring requirements is not granted, any lagoon other than a low pollution potential lagoon would require double synthetic liners with interstitial

wastes adequately addresses this concern. In addition there is always the "variance process" addressed in proposed K.A.R. 28-16-174 that can be employed to address "special" site-specific conditions.

CETCO Lining Technologies:
28-16-167. Requirements for impermeable synthetic membrane liners **and impermeable membrane-backed geosynthetic clay liners** in industrial wastewater treatment system lagoons.

Amend the title as shown above and add (b) as follows.

(b) The following requirements shall apply to industrial impermeable membrane-backed geosynthetic clay liners:

(1) The impermeable membrane-backed geosynthetic clay liner system shall be comprised of primary and secondary impermeable membrane-backed geosynthetic clay liners with an intermediate leak detection system provided.

(2) The liner shall be a least 0.25 inches in thickness.

(3) The liner shall be covered with a minimum 12 inches of soil cover.

(4) The engineer designing the wastewater lagoon shall obtain a certification from the liner manufacturer that includes the following:

(A) Confirmation that the specified liner is compatible for use with the proposed wastewater to be retained or treated; and

(B) the manufacturer's estimated leakage, permeability, or transmissivity rate of the specified liner expressed in units of volume per area per time (gallons per acre per day) for a properly installed liner. The leakage, permeability, or transmissivity rate shall reflect the expected rate of movement of fluids through a membrane-backed geosynthetic clay liner when considering the properties of the liner material, liner thickness, normally expected manufacturing defects in the liner material, and normally expected defects associated with the seaming and installation process.

Response:
CETCO produces a geosynthetic clay liner product which is a bentonite and geotextile engineered composite. CETCO's patented manufacturing process utilizes a needle punched technique which encapsulates sodium bentonite between two layers of geotextile, inhibiting the migration of the clay in its dry or hydrated state. The regulation definition of "liner" is very broad in it's scope. Because the product is a hybrid employing both geotextile membranes and bentonite, the product and its application should be approved on a case-by-case basis. The regulations do not prohibit the products use. The proposed application of this product should be approved through the engineering report and construction plan and specification review/approval process. If needed, the proposed regulations provide for a variance process where this product does not specifically meet the requirements of these regulations. Inclusion of the suggested regulation modification is not proposed.

28-16-168

CETCO Lining Technologies:
28-16-168. Postconstruction testing of municipal, commercial and industrial impermeable synthetic membrane liners **and impermeable membrane-backed geosynthetic clay liners**.

Amend title as shown above.

Add "**or impermeable membrane-backed geosynthetic clay liner**" after " impermeable synthetic membrane liner" in (a), (c), and (d) and "**or maximum synthetic membrane-backed geosynthetic clay liner leakage rate**" after "maximum membrane liner leakage rate" in (a).

Response:
CETCO produces a geosynthetic clay liner product which is a bentonite and geotextile engineered composite. CETCO's patented manufacturing process utilizes a needle punched technique which encapsulates sodium bentonite between two layers of geotextile, inhibiting the migration of the clay in its dry or hydrated state. The regulation definition of "liner" is very broad in it's scope. Because the product is a hybrid employing both geotextile membranes and bentonite, the product and its application should be approved on a case-by-case basis. The regulations do not prohibit the products use. The proposed application of this product should be approved through the engineering report and construction plan and specification review/approval process. If needed, the proposed regulations provide for a variance process where this product does not specifically meet the requirements of these regulations. Inclusion of the suggested regulation modification is not proposed.

28-16-169

James Carlson:
From the technical standpoint, these regulations mandate minimum liner thicknesses, compaction specifications, moisture parameters of soils, liner anchoring, minimum slope information, and other engineering details which typically are the discretion of the professional engineer overseeing the project. Similarly, the professional engineer is required to provide construction plans and specifications, a post-construction hydraulic-testing plan, a field hydrogeologic study of the site, certifications from the liner manufacturer as to material compatibility and resistance of liner to UV light breakdown, and a Quality Assurance/Quality Control Plan for both destructive and non-destructive seam-testing. Also required is a release contingency plan, a facility closure plan, and identification of oil, gas and water wells within 600 feet of an impoundment site, with the specter that construction activities could be terminated by KDHE if the potential to impact a well exists.
In mandating detailed technical criteria to be implemented by the professional engineer, the Agency has replaced the professional engineer's obligation with a mandated regulatory structure. We believe that when the site specific details are left to the professional engineer, who is certified by the State, a more effective and efficient installation is the result. Similarly, because of the number and complexity of the documents the agency is requiring to be certified by the PE, we propose the Agency consider building into the regulations the appropriate review time at the

end of which a response from the Agency would be required. This would afford the regulated community surety during the construction permitting process, thus allowing sufficient time for project planning.

Response:
The regulations are intended to supplement and enhance the KDHE Minimum Standards of Design to address concerns and areas which are believed to be outdated, that reflect conditions/concerns not readily evident when the Minimum Standards were published, and do not address current research findings or reflect technology available now. In addition, the proposed regulation converts the requirements of Policy #90-2 into enforceable regulation addressing the design and installation of impermeable synthetic membrane liners. The majority of the regulatory provisions address performance standards rather than detailed design criteria. There remains a vast array of design, siting, operation, and economic variables a design engineer can utilize to custom design a wastewater treatment system for their client. Contrary to the commentor's concerns, consulting firms continue to request more prescriptive regulatory design criteria to better enable them to complete design projects in a timely manner with some surety the design will be approved.

Stipulating a 30 day review period for plan and specification turnaround is not practical for a number of reasons. First, the Kansas Department of Administration prohibits regulation text that is "self regulatory" in nature. Second, stipulating a mandatory review turnaround time would lead to situations where the agency may provide technical comments, in a timely manner, that need to be addressed which may not be responded to in a timely manner by the permit applicant or their consultant. Third, current regulations, for over the last quarter century, have placed the regulated community and consultants on notice that permitting activities may take up to 180 days to complete. KDHE makes every effort to expedite reviews and processing of permits, engineering reports, construction plans and specifications.

Charles Benjamin:
The rules do not list certain key quality control standards commonly employed during and after lagoon construction such as degree of compaction, number and thickness of lifts, clearance of objects that can damage liners and measures to protect liners from damage after completion. Instead the Department simply looks at the resultant seepage rate achieved during a single post construction seepage test. The inclusions of such standards would provide greater assurance that seepage will remain within the desired rate limit over the life of the facility.

Response:
The proposed regulations are intended to enhance and supplement KDHE's Minimum Standards of Design. As noted in proposed K.A.R. 28-16-166, 28-16-167, and 28-16-169, these proposed regulations only control when there is a design or construction criteria which conflicts with the provisions in the Minimum Standards of Design.

Legislative Joint Committee on Administrative Rules and Regulations:
KAR 28-16-166. In subsection (f), clarify when these standards are to be used. (See also KAR 28-16-167(j) and 28-16-169(b).

Response:
We believe this text is adequate.

28-16-170

28-16-171

Bob Meyers:
However, those enhanced standards do not appear to be overly protective. They will not eliminate the threat of contamination from lagoon systems. Seepage rates can exceed their estimates. Lagoon liners can fail or have their integrity impaired through casualty or misuse. Overflow events can discharge lagoon contents onto unprotected soils and thereby circumvent protective liners. Thus, unless site-specific factors demonstrate otherwise, it will be important that lagoon systems in close proximity to groundwater areas be required to include monitoring wells so that any pollution to the groundwater which may occur can be promptly detected and so that remedial measures can be quickly implemented.

Response:
The proposed regulations already address site specific factors dealing with lagoon systems "in close proximity" to groundwater by prohibiting new construction when a minimum 10 foot separation between the lagoon bottom and groundwater can not be provided and with enhanced liner provisions requiring a maximum soil liner seepage rate of less than 1/10-inch per day. So long as a soil liner is employed, there will be some degree of seepage. Seepage rates at the time construction is completed should not exceed the estimated seepage estimates as the proposed regulations require postconstruction testing to confirm compliance with the maximum allowable seepage criteria. Failure of a soil liner is hard to detect without a means to accurately conduct a hydraulic water balance for the wastewater lagoon or monitoring for the presence of seepage i.e., groundwater monitoring. The proposed regulations address a requirement that new municipal or commercial earthen lagoons within the Equus Beds include the design, installation, and sampling of groundwater monitoring wells. KDHE retains the authority, in the proposed regulations, to require the installation and monitoring of groundwater monitoring wells whenever it is believed to be necessary in the State. Monitoring the degree of leakage, on a routine basis, when a single impermeable synthetic membrane liner is employed is difficult unless damage to the liner can be observed visually, or the extent of water loss is significant. The Kansas State University livestock wastewater lagoon study found that a designed soil liner system with seepage less than ¼-inch per day can generally be constructed statewide. The proposed regulations allow use of a soil liner within the Equus Beds, with special conditions. If a new lagoon is constructed within the Equus Beds, and the designed soil liner will not meet the less than 1/10-inch per day criteria because of the in situ soils or amended in situ soils, groundwater monitoring should be required for single impermeable synthetic membrane liner systems to determine when leakage occurs. The regulation has been modified to require groundwater monitoring capabilities for new lagoons employing single impermeable synthetic membrane liners within the Equus Beds. The estimated cost for constructing a 3-well monitoring system is estimated to be $4,597 for shallow wells and $10,132 for deep wells. The annual cost for sampling and analysis is estimated at

$225. Overflows of wastewater from a lagoon are already addressed by current Kansas Water Pollution Control Permits which contain provisions requiring the reporting of insufficient freeboard and/or a actual discharge if one were to occur.

Westar Energy:
KAR 28-16-171(d): Can the text that reads, "groundwater monitoring plan" be changed to "sampling and analysis plan (SAP)"? This will correlate with the current sampling requirements of KDHE's solid waste program.

Response:
The KDHE solid waste program requirements addressing a sampling and analysis plan (SAP) can be found in K.A.R. 28-29-112(b). The proposed regulation addresses items and provisions which are not covered in the solid waste SAP requirements. The regulation has not been modified.

28-16-172

28-16-173

Bob Myers:
The need for closure plans and the close supervision of lagoon closures is critical.

- As noted in the K-State study, the greatest danger a lagoon system poses to the groundwater is after it is no longer being actively used.
- I do not see that the proposed regulations include a bonding requirement to guarantee at the time of the original permitting of a lagoon system that the funds will be present at the end to carry out a proper lagoon closure, and the same may well be cost-prohibitive. However, we feel it will be important to develop some other means to guarantee that closures will be carried out. One possible option in this regard would be the development of a closure trust fund similar to what has been used for funding the removal of underground storage tanks.

Response:
We do not believe a closure bond is required at this time. KDHE has been successful in intervening in bankruptcy cases to secure funding to close wastewater treatment systems and in working with existing and new property owners to close out wastewater treatment facilities. A major drawback to closure bonds is the cost to the permittee which is estimated to be 10 percent of the face value of the bond, annually. If abandonment/closures become an issue, KDHE will revisit whether to require a closure bond.

Charles Benjamin:
The closure and proper remediation of lagoons that have been abandoned is crucial to the long run protection of groundwater. The Department needs to specify the procedures they will employ to consider the closure plan and needs to make a general statement about what soil and groundwater contamination standards they will apply. We commend the Department for

specifically stating that the owner will be responsible for cleaning up contaminated soil and groundwater beneath the lagoon. This will give owners incentive to consider both the short term and long run costs associated with the quality of construction of their facility.

Response:
The proposed regulation requires new lagoon projects to include the development of a closure plan which is to address potential remedial activities. For existing lagoons, KDHE can require the development or the update of a closure plan. It is expected that contact with KDHE will be required prior to the closure plan being developed to establish and agree to the potential pollutants of concern and to address applicable cleanup/closure standards. It is KDHE's intent to employ the KDHE Bureau of Environmental Remediation's "Risk-based Standards for Kansas (RSK) Manual which is on the KDHE Bureau of Environmental Remediation web page. The RSK Manual does not adopt specific pollutant standards, but rather a process for calculating a risk-based criteria that is individually tailored to a specific site/case and whether soil or groundwater is involved.

CETCO Lining Technologies:
Add "**or impermeable membrane-backed geosynthetic clay liner**" after "impermeable synthetic membrane liner" in (d)(2) and (d)(5).

Response:
CETCO produces a geosynthetic clay liner product which is a bentonite and geotextile engineered composite. CETCO's patented manufacturing process utilizes a needle punched technique which encapsulates sodium bentonite between two layers of geotextile, inhibiting the migration of the clay in its dry or hydrated state. The regulation definition of "liner" is very broad in it's scope. Because the product is a hybrid employing both geotextile membranes and bentonite, the product and its application should be approved on a case-by-case basis. The regulations do not prohibit the products use. The proposed application of this product should be approved through the engineering report and construction plan and specification review/approval process. If needed, the proposed regulations provide for a variance process where this product does not specifically meet the requirements of these regulations. Inclusion of the suggested regulation modification is not proposed.

28-16-174

Bob Myers:
We support the inclusion in the proposed regulations of the availability of a variance from specific regulatory requirements. While the burden would be rightly on the applicant to make the appropriate showings, it is consistent with the intent for requirements to be tailored to specific site conditions that an applicant have the ability to demonstrate that local conditions do not present the danger which a particular requirements is intended to address, or to demonstrate that new technologies will provide the protections needed.

Response:
The variance provisions of K.A.R. 28-16-174 provide for this.

James Carlson:
With respect to the variance provision found in the proposed wastewater regulations, we believe that KDHE should consider including a process of establishing how a variance may be considered, prepared, reviewed, and granted, including general criteria, so that the process can be consistently and objectively applied over time.

Response:
The general process for submission of a variance is detailed in the regulation. The types and variations on the number of potential variance requests is too numerous for KDHE to develop and specify approval/denial criteria that will be considered. With technologies and testing procedures continually developing and changing, it would be impossible to predict every conceivable type of variance request.

James Carlson:
We suggest that KDHE consider including in the variance provision opportunities to evaluate the toxicity of wastewaters, site parameters and other risk or site-based parameters which may be reasonably applied in specific situations that are consistent with good industrial and environmental design practice.

Response:
The variance process has this flexibility.

Sunflower Electric Power Corporation:
In KAR 28-16-174, KDHE has provided a variance option that could allow for site or waste specific circumstances to be taken into account when deviating from the technical or administrative requirements. Sunflower agrees that a variance may be required to be in keeping with KSA 65-171(d) which, in pertinent part, reads as follows:

> "taking into account the varying conditions that are probable for each source of sewage and its possible place of disposal, discharge or escape, may provide for varying control measures required in each case to those the Secretary finds to be necessary to prevent pollution."

Because one purpose of a variance is to allow the regulated community flexibility and protection in dealing with varying conditions, codification of how a variance may be applied for, reviewed, and granted is essential to ensure consistency throughout time and staff changes. The highly detailed nature of the regulations in K.A.R. 28-16-160 through 28-16-173 are brightly contrasted by the vagueness found in the proposed variance, which contains uncertain criteria by which an alternative request can be objectively measured by KDHE. We suggest KDHE consider incorporation of variance language in KAR 28-16-174 similar to the variance already found in the Kansas Solid Waste Regulations KAR 28-29-2, as follows:

28-29-2. Variances.

> "(a) General Procedure. If exceptional circumstances make strict conformity with these regulations impractical or not feasible, a person may submit a written request for a

variance from these regulations. The department may grant a variance from these regulations and stipulate conditions and time limitations as necessary to comply with the intent of all applicable state and federal laws. The department shall review the variance request and notify the person within ninety (90) days of receipt that the application is approved, denied, or requires modification."

"(b) Experimental operations. Variances may be granted to facilitate experimental operations intended to develop new methods or technology. Variances for experimental operations shall be considered only where significant health, safety, environmental hazards, or nuisances will not be created, and when a detailed proposal is submitted and accepted which sets forth the objectives, procedures, controls, monitoring, reporting, time frame, and other data regarding the experiment."

"(c) Restrictions. Variances for experimental operations shall be limited to a maximum of two (2) years; however, the department may renew the variance for one or more additional two-year periods upon a showing by the person that the need for a variance continues to be valid."

With the addition of:

"(d) Performance-based design. An applicant may propose variances from the general design requirements otherwise imposed by this regulation where: (1) the risk for contamination is either ~~minimal~~ low initially or can be made ~~minimal~~ low by the conditions, controls, and procedures set forth in the request; (2) the specific wastewater ~~materials~~ to be salvaged, contained or stored have ~~no~~ low toxicity potential to cause risk to human health or the environment, or ~~and~~;

(3) where the specific materials to be salvaged, contained or stored will or could in the normal course of activity be discharged into the environment through a legally established point of discharge. Variances granted place a strict limitation of changes in the process which require administrative review and acceptance prior to implementation of any such change."

We suggest that KDHE consider including in the variance provision opportunities to evaluate the toxicity of wastewaters, site parameters and other risk or site-based parameters which may be reasonably applied in specific situations that are consistent with good industrial and environmental design practice.

Response:

We believe the current text provides more flexibility and is less restrictive than the requested text. Stipulating a 30 day review period for plan and specification turnaround is not practical for a number of reasons. First, the Kansas Department of Administration prohibits regulation text that is "self regulatory" in nature. Second, stipulating a mandatory review turnaround time would lead to situations where the agency may provide technical comments in a timely manner that need to be addressed which may not be responded to in a timely manner by the permittee or their consultant. Third, current regulations, for over the last quarter century, have placed the regulated community and consultants on notice that permitting activities may take up to 180 days to complete. KDHE makes every effort to expedite reviews and processing of permits,

engineering reports, construction plans and specifications. The requested addition of (d) text raises the question as to what criteria would constitute a "low potential for contamination" or "low toxicity".

MISCELLANEOUS

Bob Myers:
We urge the need for continued monitoring and research regarding the performance and adequacy of synthetic liners, and the continued consideration of further modifications to these regulations based upon experience and upon advancements in technology.

Response:
We agree with the commentor.

Bob Myers:
Finally the regulations which are developed for municipal, commercial, and industrial lagoons should then serve as the model on which regulations next need to be developed for agricultural lagoons.

Response:
KDHE is attempting to assure consistency where appropriate. It should be noted the Livestock Waste Management (CAFO) regulations were placed on public notice prior to changes to the Municipal, Commercial, and Industrial Wastewater Lagoon Requirements being adopted.

Bessie Black:
As good as these regulations are, if this is the regulations, they are not good enough. There is not one word in there about septic tanks. Septic tanks pollute forever. They are transferred from homeowner to homeowner to homeowner. It never goes back to farmland. Its polluted forever. Not one word in here.

Here are a few things I would do if I were KDHE:

1. Stop using herbicide & insecticides.
2. Put all new housing on city sewer & water.
3. Stop using lead sinkers for fishing.
4. Stop using gasoline engine boats. (Some counties only allow battery operated, which is good.)
5. Stop polluting our rivers and streams with trash & oil.
6. Start talking to the chemical companies to see if they can make a product for the farmers, and do the job, but not harm the ground water. Its not just farmers that are polluting, its all of us.
7. Teach our school children 1st to 8th grades. (Mandatory) about how to protect our precious resources. These kids are our future.
8. Don't put city dumps or large city sewers on the Equus Beds. It would be disastrous.

Herbicides and septic tanks are really bad polluters. We need to stop polluting.

Response:
The proposed regulations were not intended to address septic tanks, only wastewater treatment lagoons.
KDHE recommends regionalization whenever practical.
The remainder of the issues raised are outside of the scope of these regulations.

Legislative Joint Committee on Administrative Rules and Regulations:
The Committee is concerned that the League of Kansas Municipalities has not appeared to comment on the regulations concerning industrial wastewater lagoon requirements. The Committee believes that input from the municipalities is vital on these proposed regulations.

Response:
We note the Committee's concern. Complete copies of the proposed regulations and Regulatory Impact Statement had been mailed to League of Kansas Municipalities for their review and comment on May 12, 2004.

Dale & Darathea Appl:
Submitted a letter regarding a swine facility operated by Seaboard approximately 1½ miles from their home. Complained about odors and the plastic lined lagoons having bubbles in them.

Response:
The complaint appeared to be specifically targeted at the Seaboard facility as opposed to providing input regarding the proposed Municipal, Commercial, and Industrial Lagoon Regulations. The information, upon receipt on September 9, 2004, was directed to the KDHE Bureau of Water Livestock Waste Management Section for investigation and followup.

Don Skokan:
Submitted a comment regarding his concern about Alternative Community Sewer Systems (ACSS) in Sedgwick County. While acknowledging the ACSSs are not a part of the Municipal, Commercial, and Industrial Lagoon Regulations he wanted input on how is concern could eventually be addressed by regulation or legislation.

Response:
The following text is from a KDHE letter dated September 7, 2004, responding to Mr. Skokan:

"This responds to your September 2, 2004 letter addressing the Kansas Department of Health and Environment's (KDHE's) proposed Municipal, Commercial, and Industrial (MCI) Lagoon Regulations and their relationship to regulating Alternative Community Sewer Systems (ACSS) in Sedgwick County. I am sorry if there may have been confusion regarding whether the proposed KDHE regulations would address ACSSs. In the pre-regulation development information provided prior to the March/April 2003 pubic outreach activities, KDHE noted the proposed regulations were one part of a series of activities KDHE was taking to enhance groundwater protection throughout the entire State. Noted in the outreach information were regulations addressing the design and operation of brine ponds utilized by the underground hydrocarbon storage industry. These brine pond regulations have been developed and adopted. It also noted that proposed regulations, similar to the MCI regulations, were being developed and

will be run as a separate initiative addressing livestock waste management and wastewater lagoons.

KDHE staff are aware of the ACSS issue in Sedgwick County. At this time, KDHE does not have plans for the development of specific regulations addressing the ACSS issue(s). As the specific issue(s) is presently not well defined, we are unable to make a determination whether KDHE currently has adequate statutory authority to develop regulations which would address the specific concern(s). If KDHE does not currently have clear statutory authority for the development of the proposed regulations, the statutory authority would have to be secured first.

Currently, individual wastewater systems are regulated locally by cities or counties. Local regulations follow general State regulations and guidelines. The issues you note are difficult as they touch on land use controls and management options and a myriad of alternate treatment systems of varying efficiency. Your comments in your April 26, 2003 letter (attachment) indicate good insight into the issues concerning ACSSs.

Having the matter addressed by the Legislature is always an option. Their involvement in establishing policy, direction, and clear agency authority is always beneficial in establishing regulations addressing an issue such as this. Thank you for support of those efforts to protect our groundwater resources."

Kansas Association of School Boards:
Initially, it does not appear that these regulations will have a direct effect on Kansas school districts. However, additional fee increases result in a burden on Kansas school districts as inflationary costs increase and legislative funding for education decreases.

Response:
Comment was noted.

Equus Beds Groundwater Management District No. 2 Board:
Do the proposed regulations address single family lagoon systems?
How do the regulations address livestock waste lagoons?

Response:
The answer to the first question is no and the second is that they do not address livestock waste lagoons.

REGULATORY IMPACT STATEMENT

Electric Utilities of Kansas:
Regulatory Impact Statement Pg. 14: "Coal fired power plants control stormwater runoff from coal piles and coal ash which contain concentrations of heavy metals."

We disagree with this regulatory impact statement. It should read, "... which, depending on the coal used, may contain concentrations of heavy metals."

Response:
We note the comment. The regulations were modified, based on information submitted for KDHE review, to include coal pile stormwater runoff, coal ash, and air pollution control scrubber wastewater as low pollution potential wastes.